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VETERINARY MEDICINE

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No. 6
VOL. XXIV

180 N. Michigan Ave.
Chicago, U. S. A.

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor

A Merger of Serum Producers

THE merger of five of the large anti-hog-cholera serum producers into a single corporation which was announced in VETERINARY MEDICINE last month is of concern to a large number of veterinarians and because of the trend toward further consolidation of which it is significant, it is of importance to the whole swine-producing industry, to the consumers of pork and to the carriers, distributors and others that come between the swine raiser and the pork consumer.

Anti-hog cholera serum has been available for so long and in such quantities that most of us have come to take it for granted, like the daily newspaper or fresh vegetables at all seasons, or ready means of rapid transportation; all matters involving vast and complicated organizations for their achievement and with which the majority of mankind the world over are unacquainted. Perhaps it is not unprofitable at this time to contrast the swine industry of pre-Dorset days with the industry at present.

Without anti-hog cholera serum our swine industry could not exist as at present organized, and the price of pork would be lower to the producer and higher to the consumer than at present. The traffic in feeder hogs would be unknown and all hogs would have to be finished for market where farrowed. The exhibition of breeding stock at state and county fairs and the interchange of pure-bred stock would be greatly reduced if not altogether unprofitable and as a consequence, discontinued. The remarkable improvement of the breeds of swine during the last score of years would not have occurred, nor without anti-hog cholera serum would the hog have become the marvelously efficient machine that it now is for the conversion of grain and forage into human food.

It must be said, however, that the entries in the serum account are not all credits. The problem of swine parasites is, indirectly, largely the result of the use of serum. When hog cholera every few years wiped out all the swine on a given farm and maintained the premises hog-free for one to two years, it furnished an interruption in the life cycle of the parasites that prevented heavy infestations. By making profitable a vast traffic in swine for breeding and feeding purposes, serum has contributed indirectly but extensively to the rapid spread of parasites. In like manner, the toll of hog cholera lessened the toll of swine enteritis and the whole group of filth

borne diseases. In some measure, the McLean County system may be said to have been evolved to do at little cost, what hog cholera formerly did at a prohibitive cost.

Serum the Most Important Biologic Product

Since early in its production anti-hog cholera serum has stood first among veterinary biologics in the amount produced and in the value of the product, in fact among all veterinary supplies it has ranked first in value. Until about a decade ago, the production and distribution of serum was quite profitable and many hastened to equip serum plants and start production; some without previous business experience or any definite plan for distribution. When, soon after the close of the World War, the large annual increase in the amount of serum used ceased, the industry was greatly overequipped, i. e., had a production capacity far in excess of the demand for serum, and suffered acutely from over production and under financing. The field of serum sales became a highly competitive one and many abuses grew up both within and without the industry—abuses that were and are costly for the producer, distributor and user of anti-hog cholera serum and for the swine raiser as well.

The list of abuses in the sale and distribution of serum from which the serum producer, the serum user and the swine owner suffered and which is the motive power behind the present and projected consolidations among the producers, is far too long to catalog here, but for the purpose of the record and as a danger signal to new industries that may develop in this field, a few of the more glaring abuses that came into existence may be pointed out.

In the early years of its manufacture, serum was sold for cash and the rapid development of the industry with little outside financing, was largely due to this sound principle. But with increased production, lessened sales, accumulating stock and expanding bank credits of the early post-war period, the plan of extending almost unlimited credit in serum purchases to nearly all who asked it, or could be induced to accept it, was suddenly adopted. This benefitted no one and harmed all connected with the production, distribution and use of serum. Previous to that time, the vaccination of hogs had been almost entirely a cash transaction for the veterinarian. Now he passed along the credit on serum allowed him by the producer and jobber, and with it credit for the fee for his services. Without previous experience in the art of the credit man, many practitioners extended thousands of dollars of credit to swine owners who, hit hard by the deflation in agriculture, in many instances could not or would not pay. Under the circumstances, the veterinarian in some instances, could not meet his obligations, not only to the serum producer but to others. Credit was ruined and not a few bankruptcies resulted. The surpluses accumulated by serum producers in more prosperous years were wiped out, and the industry was in the main, deprived of funds for research into better methods of production or for the promotion of the use of serum. Some producers went to the extent of placing serum on consignment with prospective users to be paid for when used, if ever. This latter plan was so wholly bad that it promptly eliminated itself. The sale of serum on credit having failed either to increase the use and therefore the sale of serum, or to constitute a profitable outlet for it was drastically revised to the advantage of all concerned.

Since all serum plants, with the exception of a few unimportant producers with a strictly local distribution, operated under Federal license, and all responsible producers were making a good product, it was deemed by many that the best selling argument was one that stressed a superior service. Many went to absurd extremes in establishing local agencies or distributing points, advertising a "24-hour service" and encouraging users to place their orders by wire or long dis-

tance telephone at the expense of the producer. Conceding that at one time the term "distributor" was in 50% of the cases a camoflage for a special discount to users who demanded it, the number of bona fide distributors still exceeded all reason and does to this day. It is uneconomic and places a heavy tax on the cost of serum.

Veterinarians Add to the Producers' Troubles

Up to this point, the troubles of the serum producers were solely of their own making; but here the practicing veterinarian heartily accepted the urgent invitation to contribute to the delirium that was euphemistically termed the serum "business," under the guize of accepting "service." Thousands of instances of this sort might be cited from the experiences of almost any distributor, but three actual occurrences will illustrate the whole:

1. A practitioner in Illinois in a single day, sent by wire collect, five separate orders, each for 10,000cc of serum, to a producer in another state. Conceivably, circumstances might justify some measure of this, but they did not justify it in this particular instance. This veterinarian's practice and the season was such that he might well have carried a 100,000cc's in stock and have ordered his supplies by mail. The serum producer delivered to the train each of the five orders separately.

2. A veterinarian called a distant serum producer on the telephone, reversing the charges and ordered 50 cents worth of virus. The telephone toll was $2.40!

3. The writer spent a few hours one night at the height of the vaccinating season, at one of the large veterinary supply houses. One of the proprietors, a shipping clerk and a delivery man were on duty. Within a period of 5 hours, 7:00 P. M. to 12 Midnight, eight long distance telephone calls and three telegrams were received, all charges collect. They resulted in four orders for serum, one order for hypodermic needles; three inquiries as to the price of serum and three inquiries as to shipments of serum that had been ordered earlier. The casual nature of the inquiries was such as to almost place them under the head of long distance visiting. No business should be asked to bear such a useless waste.

The foregoing were but minor handicaps to the serum industry as compared with the lack of a stabilized price for serum. Veterinarians in the same county were sometimes paying almost as many different prices for serum as there were veterinarians. Serum purchased at a given price might be on the market at a different and frequently considerably lower price, when it was used but a week or two later. A number of evils and major ones resulted from price differences and price fluctuations. It led to price cutting among veterinarians. The one who purchased serum at the lowest figure could, and often did, quote a lower price for vaccinating, which led to his competitor cutting his price, with the incentive to use insufficient serum or hurry his work to make up for it, only to be again under bid by the user of the low-priced serum and so on; inadequate pay, insufficient examination of the herd, too little after care, hurried work that failed to impress the owner of the hogs as high class, poor results, a disgruntled owner, less vaccination in the future, etc. all lurked on the trail of this evil.

The unstable prices of serum must share, with the practice of veterinarians in charging for vaccination by the cubic centimeter with no indication as to what part of the charge was for professional services and what part was for the serum and virus used, the responsibility for raising in the minds of many swine owners a suspicion that they were being overcharged for serum by their veterinarians. This suspicion was fundamentally responsible for starting much of the lay vaccination.

In the foregoing category of abuses, nothing has been said of the abuse of free serum for revaccination in case of cholera "breaks." This is a controversial subject, but the fol-

lowing can be agreed upon generally: The procedure is costly. In a majority of cases, the "breaks" are not the fault of the serum and virus used. Furnishing free serum for revaccination is an admission on the part of the producer that the serum or virus or both were at fault. It seldom satisfies the veterinarian or the swine owner whose loss has been considerable. It lessens confidence in the efficacy of anti-hog cholera serum far more than it builds good will for the producer. Depending upon revaccination frequently causes a loss of time in discovering the real ailment and applying the proper corrective measures.

The Greater Handicap

In most instances where an industry is disorganized or in a chaotic condition, the greatest loss is not on the business done but on the opportunities that are lost. So it has been for a number of years in the serum industry. Although serum has sold at less than a reasonable profit, and for a considerable time at less than cost of manufacture and distribution; and although it has been burdened with extravagant and wasteful sales and distribution methods; the chief loss has been the loss due to the failure to promote the business, the lack of effort to increase the use of serum generally. In the early history of serum production, the U. S. Department of Agriculture promoted its use effectively. Since the Federal demonstration and control of hog cholera work was discontinued, there has been no organized effort to promote the use of serum.

A consolidation, or rather various consolidations among serum producers has been discussed for a long time. The merger of the five large companies that was announced last month, may be as far as consolidations will go. There may be others. Two additional mergers have already been discussed at recent meetings held for that purpose; one to include most of the important companies still operating independently and the other to include most of the group of small companies selling serum to the farmers direct. Whether any further mergers will occur in the near future is as yet unknown. Whether these mergers if they do occur, will cure or relieve the ills from which the industry is suffering of course is problematic. The outlook is hopeful, however. A few strong companies, in control of the situation, by far-sighted planning, might materially increase the volume of serum used, cut the cost of manufacture, greatly reduce the cost of selling and distribution and even at the present low price of serum, put its production on a profitable basis.

It is highly desirable both from the veterinarian's and the swine owner's point of view that the production of serum be placed on a safe, stable, profitable basis. Only then can they rely safely upon an adequate supply of high quality serum with ample reserves to take care of any emergency. Only then can the producer assume some of the burden of educating the swine owner to use serum, a task that devolves largely upon the practitioner at present. Only when the manufacturer of serum can expect to sell his product for more than it cost him, can he be looked to to carry a reserve that will prevent a repetition of the conditions that obtained in 1926.

Background of the Allied Laboratories

As announced last month, the name of the merger in the veterinary supply field is the Allied Laboratories, Inc. Its general offices are located at 310 South Michigan Avenue, Chicago. The companies merging were the Pitman-Moore Company, the Sioux City Serum Company, the Sioux Falls Serum Company and the United Serum Company. The new company purchased the Royal Serum Company and merged it with the others. All five have bulked large in the serum industry since early in its history. A brief record of these companies is interesting at this time.

Pitman-Moore Company.—This is the oldest of the companies in the coalition. It was organized in 1899 by Harry C. Pitman and John C. Myers as a physician's supply house. In 1905 Harry C. Moore joined the

organization and after a few years the company was reorganized and the name changed from Pitman-Myers to Pitman-Moore Company, with Mr. Moore as president.

Following Mr. Moore's death in 1919, his interests were purchased by James E. Bartlett, formerly president of Parke, Davis & Company, who has the active management of the company. Mr. Bartlett has been made chairman of the board of the new company.

In 1911, the firm decided to enter the veterinary biologic field, including the manufacture of anti-hog-cholera serum, and a new plant was built in the open country at Zionsville, Indiana, where complete isolation insured the best of sanitary conditions. The late Geo. H. Roberts, former president of the Indiana Veterinary College, was the first director of the Pitman-Moore Biological Laboratories. He resigned this position in 1918 to accept a position on the veterinary staff of Purdue University, and was succeeded by Edw. A. Cahill, now president of the Allied Laboratories, Inc. Thomas W. Munce (Univ. of Pa. '15) succeeds Doctor Cahill as director of Pitman-Moore Biological Laboratories. He has been with the company since 1919 as assistant director.

In addition to the foregoing, the veterinary staff of the Pitman-Moore Biological Laboratories includes: S. H. Regenos (O. S. U. '13), bacteriologist; V. F. Saylor (I. V. C. '14), in charge of serum-virus production; Henry A. Hoffman (K. S. A. C. '17), research bacteriologist; J. L. Kixmiller (I. V. C. '15), field veterinarian; Harry W. Jakeman (Univ. of Pa. '09), manager New England branch; E. K. Glover (K. C. V. C. '12), western representative; and C. W. McLaughlin (C. V. C. '17), Illinois representative.

Sioux City Serum Company.—This company was organized in 1912 by W. F. Gilchrist, treasurer of the new company; S. F. Cusack, who becomes executive vice president of the new company, and F. W. Larson. The veterinary staff is composed of F. W. Larson (I. S. C. '09), chief veterinarian; G. W. Miller (K. C. V. C.), assistant director; H. A. Gamrath (I. S. C. '14), bacteriologist; and L. E. Willey (I. S. C. '11), field veterinarian.

The Sioux City Serum Company was the originator of the Simplex machine for tail bleeding and defibrinating. It is an aid to sanitation and secures a superior yield over ordinary methods.

Sioux Falls Serum Company.—This company was organized in 1913 by Frank S. Wagner; Otis B. Garrison, a vice president of the new company; F. B. Hall, secretary of the new company, and W. R. Laird. In 1920 N. L. Nelson resigned his position on the faculty of the Iowa State College to join the organization. In 1921 O. C. Selby, a practitioner in Minnesota and former state veterinarian of South Dakota, joined the company and assumed charge of its Minnesota branch. In 1923, E. E. Jones was added to the veterinary personnel as production assistant. In the same year, C. P. Snyder resigned as U. S. Inspector in Charge at Sioux City, to join the Sioux Falls Serum Company, and the production of clear serum was started.

In 1924, Geo. Blohm joined the company as assistant superintendent of production. In 1928 L. E. Mersch, on graduation from the Iowa State College, was added to the staff as advertising manager.

Royal Serum Company.—This company was organized in 1914 by E. K. Glover, Clay W. Stephenson and John Hoaglin. Doctor Glover came to this company from the old American Serum Company, one of the first half dozen plants in serum production. He resigned this position to participate in the organization of the Royal Serum Company. In 1918 he resigned from the Royal Serum Company and became sole owner of the Royal Biological Laboratories which he operated until in 1920, when it was merged with the Haver-Glover Laboratories. Disposing of his interests in the Haver-Glover Laboratories in 1924, he conducted a small animal hospital in Kansas City until 1927, when he joined the Pitman-Moore organization as stated above.

Frank Hueben (K. C. V. C. '10) also left the American Serum Company to join the Royal at the time of its organization. Since

1914, Doctor Hueben has personally conducted all autopsies on virus animals at the Royal plant, running from 20,000 to 30,000 such autopsies a year.

John Reardon joined the Royal company early in its history in the capacity of director of sales. At present, his headquarters are at Peoria, Illinois. Other members of the veterinary staff of the Royal include: C. C. Donnelson, in charge of the Des Moines branch; Clarence L. Campbell, manager of the Mason City (Iowa) branch; M. F. Wallace, manager of the Sioux City (Iowa) branch, and R. C. Julien, former state veterinarian of Indiana, in charge of the office at Indianapolis.

Mr. Stephenson and Mr. Hoaglin are retiring from serum production. Otherwise the complete organization of the five individual companies is taken over by the Allied Laboratories, Inc.

H. E. Curry has succeeded Mr. Stephenson as general manager of the Royal Serum Company for the Allied Laboratories, and is one of the vice presidents of the latter organization.

United Serum Company.—This company was organized in 1926 to take over the assets and good will of the old United Serum Company which had operated plants in Kansas City, Wichita and East St. Louis. The Kansas City and the East St. Louis plants were closed and the capacity of the Wichita plant increased to handle the entire output. The organizers of the new United Serum Company were: H. E. Curry, John B. Thrower, J. R. Severin and H. H. Fairbanks. Doctor Severin succeeds Doctor Curry in the management of the United plant at Wichita. He has been engaged in serum production since 1917 and was vice-president of the old United company.

Doctor Thrower is in charge of production at the Wichita plant. Doctor Thrower resigned his position with the Bureau of Animal Industry in 1912 to join the American Serum Company. Since that time he has been with various serum companies.

H. H. Fairbanks (O. S. U. '08) spent seven years in the Bureau of Animal Industry and in 1921 was placed in charge of the Ohio branch of the old United Serum Company, which position he continued to hold with the reorganized company, and still holds with the Allied Laboratories, Inc.

Grant B. Munger (K. C. V. C. '11) left the Bureau of Animal Industry service to join the United service in 1924, and since that time he has been in charge of the Cedar Rapids (Iowa) branch of both the old and the new United company. He has had an important part in organizing and promoting the publicity work of the Eastern Iowa Veterinary Association.

Paul L. Matthews, N. E. Howell and David Smith are new members of the veterinary staff of the United Company, representing it in Omaha, Sioux Falls and Indianapolis, respectively.

The New President

Edw. A. Cahill has been elected to the presidency of the new corporation. Doctor Cahill is a native of Lowell, Massachusetts. He was graduated from the University of Pennsylvania in 1909 and began practice in Cannonsburg, Pennsylvania. In 1914 he gave up his practice to accept a position with the Department of Animal Industry of Massachusetts and was placed in charge of swine diseases and control work, and of the Department's pathological laboratory. His object in making the change was to permit him to take a post-graduate course in pathology and bacteriology at Harvard University, which he did in 1914 and 1915. In 1918 he accepted the position of director of the Pitman-Moore Biological Laboratories and soon after was elected vice-president of the company.

Doctor Cahill has had extensive experience in various lines of veterinary activity. He is a member of the A. V. M. A., the U. S. L. S. A., and state veterinary associations of Indiana, Massachusetts and Pennsylvania. He is well known in research circles.

In the interest of the Pitman-Moore Company, he studied live stock conditions in Argentine, Brazil, Uruguay, Mexico, Cuba, Spain, Portugal, France and England, and has had immediate charge of the company's export department. He has been in great

demand on the programs of veterinary associations, has addressed veterinary meetings in many states, and has been a regular contributor to the programs of the United States Live Stock Sanitary Association.

Questioned as to his aims in the larger field to which he has been called, Doctor Cahill stated:

"It is our hope that this merger will stabilize the serum and biological industries, not by being harmful to companies not included in the merger, but by being helpful to them and by making this a nucleus around which stabilization may be realized. We believe that Allied Laboratories, Inc., can be of tremendous assistance to the live stock owning public and to the veterinary profession by increasing the use of anti-hog cholera serum and other prophylactic agents, thereby reducing the number of susceptible animals and lessening the opportunities for widespread epizootics. To this end, the corporation is throwing its resources wholeheartedly into a campaign to educate live stock men to the value of immunization as insurance against loss by disease, to teach the live stock owners that veterinary services are worth more than their cost, and that the best results from the use of prophylactic agents are obtainable only when administered by professional hands. Our campaign will strive to place vaccination in the hands of the graduate veterinary profession, where it belongs, and to "sell" the veterinary profession to the public as it never has been before. To this end, we are now making contracts for the use of liberal advertising space in many of the leading farm journals of the country, in which carefully prepared messages will tell live stock raisers how and why regular employment of the services of trained veterinarians is a profitable investment. We expect to serve the live stock industry by making available, through the graduate veterinarian, large reserve stocks of serum and other biologics for use in preventing or treating epizootics, and by offering a source to which the profession and the live stock industry at large may come for information and assistance on questions of disease prevention and treatment. Our combined resources will make possible the establishment of a research department, which in personnel and equipment, will be adequate to render effective aid in solving many of the difficult problems of veterinary practice. The sales policy of the organization will confine the use of its products to the graduate veterinary profession, which we believe to be in the best interests of every live stock owner."

THE A. V. M. A.

"The A. V. M. A. needs and deserves the active interest and unstinted support of every veterinarian in North America." —Munce.

Probably no one will question the accuracy of the foregoing statement; certainly no veterinarian who is informed as to what the A. V. M. A. has done and is doing for the profession will question the statement that the A. V. M. A. deserves his unqualified support. How then can the qualified man look upon his obligation to his profession as other than requiring that he join the Association?

With equal truth President Munce might also have said: There is no veterinarian in North America but needs the A. V. M. A. and will be benefitted by membership in it. It works both ways; by joining the A. V. M. A. a veterinarian meets an obligation and discharges a duty, and at the same time he makes a profitable investment for himself.

In addition to the foregoing, membership in the A. V. M. A. is a privilege greatly coveted by some to whom it is denied. Certainly the man qualified for membership who does not join is "asleep at the switch." At the rate the Association is growing it will soon include practically all the successful, worth while members of the profession.

Write H. Preston Hoskins, secretary, 716 Book Building, Detroit, Michigan, for membership blank and file your application now.

Spot-Light Your Business

By FRED E. KUNKEL, Washington, D. C.

THE veterinarian who desires to make his location a bigger, better and more profitable location can find no better aid to business building than by using an electrical display sign in front of his office which tells its selling story both by day and by night.

The value of a location is judged by the business it should produce and by the amount of traffic on the street at all hours. The more traffic the better the location and the higher the rent. If you are not getting your share of the trade from the people who daily walk and drive by your place of business, you are not getting the full advantage of your location.

One way of stopping this waste, increasing patronage, and magnifying profits is to use an electric display sign. Why? Because a good electrical display sign will compel attention both by day and night. A quality sign of this sort will reflect the right kind of service. It attracts, favorably impresses, and directs business your way and catches not only transient trade, but also helps to get more new customers, as well as to bring back more repeat business from old customers.

An electric display sign in bold snow-white raised letters of glass against a dark background by day and brilliant solid letters of light by night can be read far up and down the streets.

A handsome and striking electrical display sign hits the passing traffic squarely between the eyes. They cannot help seeing it. This readily identifies your location and your service. It vitalizes your business front and greatly increases its sales power. With a day and night sign you add color, sparkle, and attraction. It compels attention and directs more people into your very doors which, naturally, increases business and profits.

Imagine a theater manager or a moving picture house doing business without electrical illumination or being able to gather capacity audiences under its roof without such aids to business-building, and you can readily see the loss that results from failure to use this type of advertising. It helps to make even the poorest kind of a location pay dividends.

There is no form of advertising so effective yet so inexpensive as day and night advertising right over your own front entrance, thrusting forth a welcoming hand to the public and bringing them into your place of business. Such display signs compel attention and soon makes you recognized and patronized by many, who now like the Levite, are passing by on the other side.

By increasing your patronage these silent salesmen reduce the cost of advertising. They make every inch of your business front work for you.

Electrical display has been the recognized box office attraction of theatrical movie and recreation park owners from time immemorial, and progressive and alert veterinarians have not been slow to capitalize on this huge drawing power of the great White Way, because specific figures have shown them increased practice and larger profits following the installation of illuminating displays.

Electrical advertising of this sort is a source of revenue rather than a tax on profits. It focuses all eyes in your direction and draws more patronage. It makes any location pay better. It centers attention on your veterinary service and fixes firmly in mind the name of your business. It impresses people a long way off and is dramatic enough to burn its image indelibly on the public mind. People are irresistibly drawn towards the light. "Spotlight Your Business," is, therefore, a good policy whether your business be supplying commodities, entertainment or service.

The Emasculatome in General Practice*

By E. L. FITCH, Audubon, Iowa

THE emasculatome or Burdizzo pincer though used in Europe and certain tropical countries, notably South Africa, for many years, was not introduced to American veterinarians until late 1927. I presume that most of you have either used this instrument or witnessed demonstrations of its use at various clinics. Largely because of its awkwardness and excessive weight the emasculatome has not gained popularity as rapidly as it should.

Obtaining my first instrument in February, 1928, I found that I was unable to handle it with any degree of ease and dexterity. After being on the receiving end of several vicious kicks I decided to attempt some modification of the straight handles so that I might be out of range of my patient's feet. The first alteration of the instrument was a long, straight extension. This helped some. The second change made was a long, angled extension handle, in reality a series of changes, as I altered the angle from fifteen to fifty degrees in order to obtain the angle that would fit most snugly to my armpit. The last change was the double angle handles, both being modified so that the emasculatome could be closed with one hand, leaving the other free to manipulate the cord into position for emasculation.

In this paper I am purposely using the word "emasculate" in preference to "castrate" because it more aptly describes both instrument and operation. In delineating the handling of various types of animals presented for emasculation I will describe, briefly, the mode of restraint most practical for each.

When emasculating calves I prefer to tie them in a corner, being careful that the head is not too high. A dehorning chute is very adaptable for handling large herds. If the calves weigh over four-hundred pounds I employ a side-line. This consists of a ten-foot rope with an end snap and ring, the ring being, let us say, about twelve inches from the snap end. The side-line is placed above the hock of the hind leg farthest from the wall, the free end passing forward over the animal's back with a tie in the corner. One should avoid pulling this rope too tightly, as this may cause the calf to sit down. The sole purpose of the rope is to check the force of kicks.

Emasculation of calves in the standing position has many advantages, including:

1. Time and labor are saved.
2. Danger of injury to the animal is minimized.
3. The impression on the client is more favorable.

As in many other surgical manipulations one should, when using the emasculatome, follow a regular routine of procedure. Make it a practice to crush either the right or left cord first—then if the calf jumps away you will know which cord to take next.

The method of applying the emasculatome is dependent, to some extent, on the type of instrument used. I open the instrument, balance it in my right hand, pass my left hand between the left leg and the scrotum and firmly grasp the neck of the scrotum well above the testicle. With the thumb and finger separate the cords and force the right cord to stand out firmly against the lateral wall of the scrotum. The open jaws are then raised along the inner surface of the right leg until they are even with the left hand. The cord is thrust between the jaws and held there by the left hand

*Presented at the 41st Annual Meeting of the Iowa Veterinary Medical Association, Des Moines, January 22-24, 1929.

while the right hand manipulates the handles to close the jaws.

If one hand retains contact with the cord in the aforementioned manner throughout the operation one will have very few slips. The left cord is crushed by the same technic except that the hands are reversed. It has not been my custom to crush across the median septum or raphe on calves but I have noted no bad results after having done so a number of times.

Restraint for emasculating lambs is simple. If, luckily, there is a bale of hay present the job is, indeed, a soft one. Just sit "a-straddle" the bale and have the attendant set the lamb on its buttocks with the hind legs drawn well up along the sides. When the lambs are over one month old I always crush one cord at a time and do not cross the median septum. Before releasing the lamb the ends of the cords should be pushed back with thumb and finger thus assuring their complete separation.

I have had the opportunity of emasculating only a few colts but the results have been most pleasing. In order to properly perform this operation on colts one needs a special retaining forcep. Colts are roped and cast as for regular castration.

No preoperative cleansing of the field is necessary. I grasp the testicle in my left hand and work my thumb and fingers down and around the cord but without any attempt to raise it. The jaws of the retaining forcep are set over the cord and closed. The assistant then grasps the forcep and raises the cord while I place the jaws of the emasculatome. No attention is paid to the relation of the cord to the median raphe, it being severed where found.

Emasculation of pigs offers a potentially profitable field. Restraint for handling them is very important. My method is to lay them on their backs in a steel frame especially made for this purpose. A light chain is buckled across the belly just in front of the hind limbs. Attendants are told *not* to hold the hind legs because the resulting resistance of the pig tenses the skin of the inguinal region so tightly that location of the cord is difficult. With a relaxed skin both cords can usually be located and picked up at one time. The same retaining forcep used on colts is used to raise the cords of pigs and the procedure is identical except that both cords are usually taken at one clipping.

At this point it would be well to warn against pressing down too firmly with the retaining forcep, thus including the penis with the cords. As you know the penis and spermatic cords of pigs lay in close proximity. I have had very few slips in pigs weighing under sixty pounds at time of emasculation but have had quite a few slips in heavier weights probably due to faulty technic.

The reaction, that is the swelling and soreness incident to emasculation, usually disappears in from four to five days in all animals except pigs and old bulls where reaction-duration, as evidenced by slight swelling may persist for ten to fourteen days. None of them, however, seem to be at all sick or "off feed" and recovery is prompt with little or no visible shrink.

Time required for complete absorption of emasculated testicles varies from one month in the smaller animals to three months in old bulls. Lambs and calves develop the fine, round, well-filled "cods" so desirable in finished animals.

In my territory calf dehorners had taken practically all calf castration at ten cents per head. The first season's use of the emasculatome proved to me that a large majority of the same farmers who had employed the lay castrators willingly paid me fifty cents per head for the added safety and excellent results following the use of this instrument. More favorable comments have been received from clients on the results following the use of the emasculatome than from any other type of the diverse veterinary services that I render them. In my mind the emasculatome is a real practice builder and it

should be in the hands of every progressive veterinarian engaged in general practice.

THE VITAMINS

Experiments have demonstrated that animals fed on a liberal diet of proteins, fats, carbohydrates, salts and water, *from which all vitamins have been excluded,* will die rather promptly and after showing definite changes in their structures and functions. The addition of minute amounts of various vitamins to this ample but lethal diet will enable it to support life and all its activities. Animals fed on *pure* carbohydrates, proteins and fats, *plus vitamins,* will produce all of the complex substances found in the body; but without the presence of vitamins, such syntheses appear to be impossible. Mice fed on *whole milk* live and thrive; fed on all the isolated *chemical constituents* of the same milk, they pine and die.

While the vitamins are now believed to be essential to complete physical and mental integrity, *they cannot be formed in the human body,* but must be *ingested.* They are inherent, extraneous *accessory food factors,* whose presence is necessary to healthy life, growth and reproduction. They are present, in minute quantities, in all natural foods which have not been cooked, canned or otherwise manhandled.

All vitamins are soluble in a mixture of ether and alcohol, and such solutions, made from wheat, butter, egg yolks and various other food substances, have been shown to contain these indispensable accessory factors. All animal fats, *except lard,* contain vitamins; while vegetable fats do not.

Five types of vitamins are now recognized, but more may be discovered at any time. These are known as vitamins A, B, C. D. and E or X. All of them, *except vitamin C,* will resist any degree of heat encountered in ordinary, brief cooking.

Clinically, the vitamins are important, not from their presence, but on account of their *absence* from the diet, a deficiency of each one of them giving rise to certain characteristic symptoms.

Vitamin A is fat-soluble, is lost when exposed to the air for some time and is inactivated by ozone.

Its *functions* seem to be the promotion of appetite, digestion, growth and tissue formation and the *prevention of infections,* especially those of the eyes and respiratory organs. *Its absence* is the specific cause of xerophthalmia and is probably a factor in the production of rickets. Those who are deficient in this vitamin tend to be physically weak, underdeveloped and dull and to fall an easy prey to infectious diseases and lymphoid hypertrophies.

It is present in practicable quantities, in whole milk, butter, cheese, egg yolk, cod-liver oil, glandular organs (liver and kidneys), green leafy vegetables, *yellow* corn and sweet potatoes and in carrots.

Vitamin B is soluble in water and in alcohol. It is dialyzable and will stand a considerable degree of heat (150 deg. C. or more) without damage.

Its *functions* are somewhat like those of vitamin A, with especial stress upon the stimulation of metabolism, protection from organic nerve diseases (it is known as the *antineuritic* vitamin) and the improvement of the milk supply of lactating women. Its *absence* gives rise to beri-beri, neuritis and atrophy of lymphoid tissue. Deficiency causes general debility and enlargement of the endocrine and other glandular organs.

The best *sources* of this vitamin are: whole-grain cereals, milk, beans and peas, vegetables and egg yolk.

Vitamin C is the most delicate of them all. It is soluble in alcohol and is easily destroyed by cooking, canning or drying.

Its *functions* seem to be general regulation of the body's functions and the prevention of *scurvy* (it is known as the *antiscorbutic* vitamin). Its *absence* results in scurvy or fatal syncope; while a deficiency causes general irregularities of the heart, respiration, digestion and psychic functions, a tendency to hemorrhage, necrosis of the tooth pulp and friability of the bones.

Vitamin C is found in the fresh juices of all citrus fruits (oranges, lemons, grapefruit, etc.); in most fresh fruits and vege-

tables and, to some extent, in cooked tomatoes, potatoes and "greens"; and in milk, *when the cows are on summer pasture.*

Vitamin D is soluble in oil and alcohol and resists heat well. It is intimately associated, if not identical with, *irradiated ergosterol.*

The *functions* of this vitamin are the regulation of the metabolism of calcium and phosphorus. It is called the *antirachitic* vitamin. In its *absence, rickets* and bony deformities occur.

It is present, in nature, in cod-liver oil, egg yolk and whole milk; and may be developed in any food substances containing sterols (most fatty foods) by irradiating them with *ultraviolet rays.*

Vitamin E or *X,* the most recently discovered, has not been at all fully studied. It is fairly stable to heat and exercises an important influence over the reproductive functions. It is probably also concerned in the metabolism of *iron.* Its *absence* results in *sterility* in all animals studied.

Wheat germ seems to be the chief source of vitamin E, and it is also found, to some extent, in all whole-grain cereals, whole milk and in many green vegetables.

It seems probable, at this time, that another vitamin, concerned in the prevention of *pellagra,* may be the next discovery in this line; in fact, Goldberger found such a vitamin in yeast, calling it, tentatively, vitamin PP.—*Clinical Medicine and Surgery.*

WILLIAMS' "DISEASES OF GENITAL ORGANS" TRANSLATED INTO GERMAN

The veterinary profession in this country owes much to works that appeared originally in the German language. Two generations of veterinarians have been taught special pathology from translations of German treatises—Friedberger & Froehner's Veterinary Pathology and Hutyra & Marek's Special Pathology and Therapeutics of Domestic Animals. Adams' "Horse shoeing," Klein's "General Therapeutics," Fischer's "Clinical Diagnosis" and "The Scientific Feeding," Leibold's "Veterinary Hygiene" and "Epizootics and Their Control During War," Crocker's "Mastitis of the Cow" and Wyman's "Obstetrics," to mention only the better known works, belong to the list of translations from the German that have found a place in our literature.

So far as the writer is aware, the translation of Prof. W. L. Williams' Diseases of the Genital Organs of Domestic Animals into the German language, which has just been announced, is the first reversal of a well-established custom. It is a matter of gratification that this first translation of an American veterinary work for the use of German veterinarians and German veterinary students should be one that has been accorded such cordial acceptance not only by the veterinary profession of this country, but by the medical profession and scientific men far afield from veterinary science.

The translation was made by Dr. Karl Beller of the Imperial Health Office at Berlin, formerly of the Agricultural School at Hohenheim-Stuttgart. Doctor Beller, a recognized authority on genital diseases, has published heretofore the results of important researches in this field.

In giving his reasons for making the work of Prof. Williams available to German readers, the translator states, it is, ". . . because I believe it important to open up to others the very rich sources of practical experience at the command of the author and place this knowledge freely at the command of the busy practitioner who must deal with the problem of genital diseases. Furthermore those scientists primarily concerned with the purely technical aspects of the study of the highly complex problem of sexual diseases of domestic mammals may obtain many valuable suggestions from it, as is well indicated by the increasing frequency with which Williams is being cited during recent years in scientific publications. For these reasons the publication of this book in German should prove helpful to those who are strangers to the English language or to those who have inadequate command of it."

Ano-Vulvitis of Feeding Cattle

By A. T. KINSLEY, Kansas City, Missouri

ANO-VULVITIS is one of a group of conditions caused by the *Actinomyces necrophorus*. This condition was identified by Fischer in Kansas in 1898. Various other enzootics have occurred in different sections of the country. A rather extensive outbreak occurred in northwestern Missouri in 1915. One outbreak of this malady was observed in a lot of 50 two-year-old heifers on full feed in central Missouri, in 1926. Several herds of cattle in Missouri were affected with ano-vulvitis in Missouri during the winter and spring months of 1929. In some instances the affected cattle were marketed at a sacrifice. Although this disease is rarely fatal, it is of considerable economic importance because of the loss of condition.

Cause

The *Actinomyces* (bacillus) *necrophorus* is the specific cause of ano-vulvitis. This organism is found in the fecal discharges of swine and probably other animals and is therefore widespread in nature. Chemic substances produced by these microbes cause coagulation necrosis in the invaded tissues and a general toxemia. It has been generally assumed that a break in the continuity of the surface tissue is necessary before these organisms can successfully gain entrance. There must be some predisposition of the exposed animals or some influence that suddenly increases the virulence of the invading organisms in the outbreaks of ano-vulvitis, for a large percentage of the herd usually becomes affected within a few hours.

Cattle of All Ages Affected

In some outbreaks, heifers and cows only were affected and in other instances the disease is confined to steers, in which case the anus, prepuce and sometimes the feet are affected. On one farm heifers, cows, steers and bulls were all equally affected. Breed and general condition do not have any influence on the occurrence of the disease. Cattle of all ages are equally susceptible; however, young calves are rarely affected with this form of necrobacillosis.

Influence of Weather

In one rather extensive outbreak, the disease occurred immediately following the thawing of a large amount of snow in the latter part of March. Because of this, the soil was soft and spongy and the cattle yards were more or less boggy and muddy. In other instances ano-vulvitis has occurred in cattle in dry lots. Cases have been observed in zero weather and in midsummer, although the disease is most prevalent in the fall and spring.

History of One Enzootic

A feeder of baby beef, who had over 600 head of good grade yearling Herefords that were kept in five separate feed lots, observed an unusual condition in the animals in one lot containing 115 heifers and called his veterinarian. A careful individual examination was made on the following day and every animal in the lot was found to be affected with ano-vulvitis in various stages of development. A casual examination was also made of the cattle in three other feed lots without detecting a single case; however, ten days later proctitis was found in all the cattle in one of these lots, consisting of 120 steers. The prepuce also was affected in all except four of this lot and they had a foot infection. In another lot in which there were 140 steers and heifers, all heifers showed ano-vulvitis and the steers preputial infection.

The disease did not appear in the other two feed lots. Each lot of cattle had a separate caretaker and there was no direct communication from one lot to the other and the lots were a distance of at least 80 rods apart. Hogs followed all the cattle not only in the three lots where the disease was

found, but also in the two lots in which the cattle were not affected.

Lesions

The characteristic local lesion consists of a sharply circumscribed slightly elevated yellowish or brownish area containing a homogeneous, dry, mealy or cheese-like substance, from which a pungent and disagreeable odor emanates. The necrotic area is surrounded by a hyperemic zone, indicating a marked tissue reaction. In some cases there will be marked systemic disturbance and rapid emaciation due to action of the absorbed chemic products of the *A. necrophorus*.

Symptoms

The disease is usually evidenced in heifers, first, by switching of the tail, and upon a close inspection a brown or black scab, varying from one quarter inch to an inch in diameter, located on the outer margin of the vulva, may be observed. The vulva and anal tissues may be invaded. The tissue immediately surrounding the lesion will be tumefied and hyperemic. The tumefaction may be so extensive that it will interfere with urination and defecation. Pain may be evidenced during urination. As the disease progresses the necrotic masses usually slough and the wound is healed by the formation of scar tissue. Cicatrization may produce more or less distortion of the affected parts, and thus interfere with the breeding of the animal.

Treatment Not Difficult

The treatment of ano-vulvitis is not difficult, providing the treatment is applied in the early stages. Treatment may be burdensome when a large number of animals are infected, as in the case of the 375 baby beef feeders. The local lesions and surrounding tissues should be thoroughly cleansed with some reliable antiseptic, such as a 3% solution of liquor cresolis. Then the scab and all necrotic tissue should be removed, either by means of a stiff brush or curette. After removing the necrotic tissue the denuded area should be painted with tincture of iodin. It may be necessary to repeat the local treatment two or three times.

CALMETTE VACCINATION EXPERIMENT DISAPPOINTING

Complete disappointment resulted from an experiment with the Calmette method of vaccination against tuberculosis, conducted by the Illinois State Department of Agriculture at Springfield. The project, which began in December, 1926, and terminated in November, 1928, was under the immediate supervision of Dr. W. P. Larson of the medical college of the University of Minnesota. It involved 60 head of cattle purchased from accredited herds and extended over a period of about two years.

Twenty cattle were vaccinated with the Calmette B. C. G. strain of tubercle bacilli. Another group of 20 were inoculated with a heavy suspension of killed tubercle bacilli. The other 20 were used as controls. Ten of the cattle which were given B. C. G. were calves only a few days old while the other ten were mature cattle under three years of age. Similar divisions were made with the 20 inoculated with killed bacilli and the 20 controls.

After a lapse of six months all 60 of the experimental cattle were exposed to tuberculosis through the introduction into the herd of 10 cattle which had reacted to the tuberculin test. Other infected animals were introduced from time to time and the test animals of the Calmette series were reinoculated at the end of one year.

On November 7, 1928, all of the animals were slaughtered and examined in the presence of a number of veterinarians, bacteriologists, sanitarians and others. The cattle vaccinated with the Calmette B. C. G. strain showed more extensive involvements and the incidence of tuberculosis was higher than the controls.

The results in percentage of infection were as follows:

Vaccinated with—	B. C. G.	Killed Bacilli	Controls
Cows	88.8%	44.4%	87.5%
Calves	57.1	25.0	33.0

Illinois Health Bulletin, 3-1-29.

STOMACH WORMS IN CATTLE*

Case No. 1

June 13, 1928, a farmer called at my office and asked for some medicine to stop the scours in a cow. Sulphocarbolate tablets were prescribed and the owner directed to put the cow on dry feed during the treatment. On October 1st he called for more tablets and said that the cow was scouring again. More tablets were prescribed with directions as before. He appeared again October 10th and asked if I could not prescribe something that would give more permanent results. I then inquired into the history of his herd.

He stated that he had been losing an animal or two with scours about every year for some time. This lead me to suspect either Johne's Disease or stomach worms.

I then asked him to collect a sample of the feces and bring it in and I would make an examination for stomach worms. The following day he and his son examined some feces and they said they found a large number of small hair-like worms. These I presumed were some species of the stomach worms and proceeded to outline a treatment.

I prescribed a 1 per cent solution of copper sulphate to be given in twelve-ounce doses once every week for three weeks. Before any benefit from this treatment could be expected, however, the cow was sold and shipped to market.

I made a call at this farm later and took particular notice of this herd of cattle. The herd consisted of approximately seventy-five head. At this time all the cattle seemed to be in fair condition. The calves were doing exceptionally well, but they had not been with the larger cattle. The larger cattle were kept in a large permanent pasture, land that is too wet to farm and has been used as a pasture for many years.

I am not reporting this as an authentic case of stomach worms since I only have the owner's word for the worms, but the history and surroundings at this farm caused me to believe that the condition in this cow was caused by stomach worms.

Case No. 2

On September 27, 1928, I was called to see a heifer about one and one-half years old that had been scouring more or less most of the summer. The animal was very weak and unable to get up. She was badly emaciated, gaunt, had a very rough coat of hair and was scouring. It was not deemed advisable to attempt to treat this case so an autopsy was suggested to which the owner's consent was obtained.

There was a marked anemic condition of all the internal organs. Some small edematous areas were found in the region of the stomach. The abomasum contained some rather heavy whitish-colored fluid and a very little food material. The mucous membranes were thickened and wrinkled and had a rather pinkish color. No worms were visible either in the fluids or on the mucous surfaces. The organ was then removed and sent to the Veterinary Investigation Laboratory at Ames for a more thorough examination. Dr. C. D. Rice reported as follows:

"You were correct in suspecting stomach worms in the specimen submitted from the heifer. They were the *Trichostrongylus extenuatus,* about 3.4 millimeters in length. One loopful of the stomach material contained twelve parasites. There were thousands in the stomach. This was the only species of parasites found."

Two other heifers had been scouring more or less and at the time of this visit were rough coated, thin in flesh and gaunt. A few others, while not scouring, showed a rough and rather unthrifty appearance as if they might have had a mild infestation.

A treatment consisting of copper sulphate 1 per cent, to be given in six-ounce doses once a week was prescribed for the affected animals, but due to the fact that

*Presented at the 41st Annual Meeting of the Iowa Veterinary Medical Association, Des Moines, January 22-24, 1929.

the owner was quite busy at this time the treatment was delayed and not carried out.

These heifers were part of a drove of twelve heifers bought from a neighbor last spring about grass time or a little before. The owner was quite certain that only a few of these heifers had been raised by the neighbor. The others he believed had been bought from other farms.

The pasture in which these heifers were kept during the summer is rather rolling and well drained. It has a limestone subsoil which crops out on the higher places. This land has all been under cultivation in recent years and was at this time seeded with timothy and clover.

About thirty other cattle, consisting of two or three cows, about twenty, six or seven hundred pound steers and a few home raised calves, were also kept in this pasture. All these cattle seemed to remain thrifty and apparently had made good gains.

I visited this farm again on January 14, 1929. No animals had been lost since September 27th, but the heifers that were in a poor condition at that time are still unthrifty and two of them showed collections of feces about the base of the tail indicating that some diarrhea was still present.

It would seem, in this case, that the infestation had taken place before the animals were brought to this farm, since none of the cattle raised on this farm or bought from other sources seemed to be affected.

Case No. 3

I was called to this farm on October 27, 1928, to see a bunch of young cattle that were scouring some and coughing. They were thin in flesh and very unthrifty. Two calves and one yearling had died. There were fifteen calves that would range in age from eight months to about one year and seven others that were around a year and a half old.

My diagnosis was hemorrhagic septicemia and the twenty-two head were vaccinated with hemorrhagic septicemia aggressin.

On November 10th I was called to this farm again. Another calf had died the day before, thus providing an opportunity for a post-mortem examination.

This calf was badly emaciated, rough coated, had been scouring and had an edematous swelling along the neck and throat. There was a marked anemia of all the internal organs and some small collections of a gelatinous material in the region of the stomach. There were some conjested areas in the lungs, but no visible hemorrhages. The abomasum contained very little food material and a considerable amount of mucous which was more or less adherent to the mucous membranes. The mucous membranes were slightly thickened. Large numbers of stomach worms, the *Hemonchus contortus,* were found free in the stomach. No other species of worms were found. No worms seemed to be attached to the wall of the stomach, but the tissues in this animal were cold at the time of the autopsy, which perhaps accounts for the worms having become loosened from the membranes.

A one per cent copper sulphate solution was prescribed to be given in two-ounce doses to the calves and three-ounce doses to the yearlings every ten days. All the calves and one yearling were treated. One calf died following the first treatment, but none have died since.

On January 14, 1929, when I last visited this herd all the animals had been treated. With the exception of one calf, all were in a thrifty condition, considering the shape they were in when the treatment was started. One calf apparently had developed pneumonia and according to the owner's statement, was not expected, at one time to survive, but at present it seems to be on the road to recovery.

The calves on this farm were pastured in a grove, and a small permanent pasture adjoining, during the summer. There were also some sheep kept with these calves. This pasture is so located

that it receives the drainage from a part of the farm including the barnyard. The yearlings were kept in a pasture on the opposite side of the farm. This land receives drainage from a neighbor's farm and barnyard. The land in this pasture is too wet for cultivation and has been pastured for several years.

There has been more or less trouble with losses in young cattle on this farm for three or four years. The owner stated, a short time ago, that he lost three head of cattle in 1927 and five in 1928. He also reported that one cow had been scouring at times and had not been doing well for about a year. This cow is no doubt suffering from stomach worms. Several others in this herd that are not showing pronounced physical symptoms may be infested.

C. E. JUHL.

Osage, Ia.

PERSISTENCE OF STOMACH WORM LARVAE IN PASTURES

In reply to the inquiry on page 112 of March issue of VETERINARY MEDICINE as to length of time pastures will remain infested with stomach worms, I submit the following results of experiments, conducted in the Piedmont section of South Carolina, which give some information as to length of time pastures will remain infested in that section.

1. A lot from which infested animals were removed November 26, 1906 was still infested September 23, 1907.

2. Infested animals were removed from pasture November 25, 1907. The pasture was plowed December 2, 1907 and planted in rye. As many sods were not turned under, this was again plowed April 1, 1908, and planted in sorghum and cow peas. Enough infestation remained to infest calves placed on the pasture June 1, and killed August 27.

3. Infested feces were exposed to heavy frosts and a light snow from November 13, 1907 to January 28, 1908, when a portion was placed in a petri dish and kept in a laboratory until August 18, 1908. Only one or two living larvae were then found.

The above were a few of the experiments conducted by me at the South Carolina Experiment Station and published in Bulletin No. 142, March, 1909.

Stomach worms caused severe losses of calves in that state and medicinal treatment did not seem effective. Experiments led us to believe that rotation of pastures was the most effective method of control.

Norwalk, Conn. M. R. Powers.

MILK SANITATION BY NO MEANS UNIVERSAL

The recording of 29 milk-borne epidemics in the United States and Canada during 1927 is evidence enough that the sanitation of milk supplies has not yet reached universal proportions. These 29 epidemics involved half a dozen diseases with typhoid fever predominating and ranged in severity from 5,000 cases of typhoid and 533 deaths in Montreal to less than half a dozen cases and no deaths in Bloomington, Illinois.

Last year there were three epidemics traced to infected milk in Illinois. About 20 cases of paratyphoid fever in South Beloit were attributed to contaminated ice cream distributed by a Beloit firm. This was but a part of an epidemic in the whole community that involved about 100 cases on the Wisconsin side of the border.

At Grant Park 37 cases of scarlet fever in an outbreak that occurred during June and July were believed to have been transmitted by infected milk.

Evidence was clear that an outbreak of about 20 cases at Edwardsville in July and August were spread by milk. In this instance a boy sick of scarlet fever was employed on a dairy farm and all cases of the epidemic were among customers of this dairy.

About 60 per cent. of the down-State municipal milk supplies in Illinois may be considered reasonably safe because it is pasteurized in plants that meet every reasonable sanitary requirement. No such

positive statement can be made about the remainder. Persons who buy unpasteurized or raw milk must be their own judge of its sanitary quality.—*Illinois Health Bulletin, 2-15-29.*

REMOVAL OF THE NASAL SEPTUM FROM A COW

December 20, 1928, a Holstein cow, aged ten months, was brought into the College hospital. She had an inspiratory and expiratory dyspnea accompanied by a foamy exudate from the nostrils and slightly accelerated breathing. The pulse and temperature were normal. The owner said the condition had been present about three weeks and was growing worse.

An examination of the respiratory tract revealed that the nostrils were partly occluded by a thickening of the nasal septum. Palpation of the septum caused a great amount of pain. The rest of the respiratory tract was normal.

The animal was placed on the operating table and the nasal septum was removed. The technic was the same as in a similar operation for the horse.

An area was shaved and disinfected with tincture of iodin, over the nasal septum just in front of the anterior extremity of the frontal sinuses. A trephine opening was made at this point and the septum grasped with a pair of compression forceps. The septum was severed by making a vertical incision just in front of the compression forceps with a guarded chisel. The anterior extremity of the septum was severed by making an incision with a scalpel from the dorsal to the ventral edges just posterior to the alar cartilages. The dorsal and ventral edges of the septum were severed between the anterior and posterior incisions with a guarded chisel and the septum was removed through the nostril.

Relief from the dyspnea was instantaneous upon removing the animal from the table. She went home in about a week breathing normally. The latest report about six weeks later was that the animal was in good health and had had no further trouble.

This is the first case on record at Iowa State College of such an operation on a cow and so far as we know no other cases have been reported elsewhere.

Harold L. McCrillis,
Ames, Iowa. Iowa State College '29.

VAGINAL PROLAPSE IN A COW

[Due to rupture of the vaginal wall and protrusion of some perivaginal fat.]

A holstein cow in poor condition was bred February 17, 1929. Immediately after the service the cow strained excessively and there was noted a slight hemorrhage from the opening into the vulva. There was also a tendency for the vaginal mucosa to prolapse during the straining. On February 27 the condition was worse and Doctor Walsh was called. The vagina was partially prolapsed and inflamed. Examination revealed a tumor-like process about the size of a grape fruit (3 to 4 inches in diameter) protruding from the dorsal wall of the vagina just anterior to the urino-genital sinus. The animal was brought to the Veterinary College hospital February 28 for treatment.

The animal was confined in the stocks and a vaginal examination with a glass speculum and light revealed the above mentioned protruberance undergoing a superficial necrosis. There were large darkened areas separated by yellow cracks. There was about a pint of creamy, cohesive, foul smelling pus in the vagina. The external os was very large and inflamed, about four inches across and thrown into large folds.

The growth was easily brought to the outside and grasped with heavy compression forceps at the base. The tumor-like mass was then removed with a blunt pointed bistoury and in five minutes the forceps were released.

The vagina was irrigated with six quarts of 1% Liquid cresol comp. solution.

There was no further treatment until March 4, 1929. The animal was again

confined and examination made with glass speculum and light. The wound at the point where the tumor was excised was covering over nicely. The cervix was still highly inflamed and enlarged. There was a small amount of foul smelling pus in the vagina. Using a vaginal atomizer through a glass speculum, the cervix was sprayed with 10% mercurochrome.

Rectal palpation revealed a normal uterus with a large corpus luteum in the right ovary and two Graafian follicles in the left.

The animal was discharged March 5, 1929.

It is the opinion of Doctor Guard that the rupture of the vagina was caused by the bull's penis during copulation. This opinion is based on the location of the rupture and on the history of bleeding and excessive straining immediately following service. The end of the penis had penetrated the dorsal wall leaving an opening through which the perivaginal fat protruded. This fatty tumor was limited and held in place by inflammation of the vaginal wall. C. T. Adamson,

Ames, Iowa. Iowa State College '29.

RECOMMENDED STANDARD FOR BRUCELLA ABORTUS AGGLUTINATION TEST*

A uniform method of issuing certificates and conducting agglutination tests is desirable: first, for the purpose of making it possible for prospective purchasers to select cattle negative to the agglutination test for contagious abortion; and, second, for the information of state live stock sanitary officials at points of destination of such cattle. For this purpose the committee makes the following recommendations:

AGGLUTINATION TEST CERTIFICATES. Certificates that cattle have been passed as non-reactors to the blood test for *Brucella abortus* infection should be issued by the Live Stock Sanitary official or his duly authorized deputy in the state of origin of such cattle. Such certificate accompanying shipment shall cover only those animals which are negative to the test as outlined in the following paragraphs. A copy of the test chart as indicated below shall accompany the certificate.

TEST CHARTS. Test Charts shall contain the following information:

First: Satisfactory identification and description of all animals in the herd. For the protection of the veterinarian taking the blood samples, for the purchaser and for the definite information of the live stock sanitary official at point of destination, it is highly desirable that the identification be in the form of numbered clincher ear tags placed in the ears of all animals.

Second: Test Charts shall contain a full record of the agglutination test on all of the adult animals in the herd from which the animals in the shipment originated. Such record should show the results of the test of each animal in at least four tubes with dilution of serum to antigen in the following proportions: 1:25; 1:50; 1:100; 1:200.

Third: On the certificates of cattle from herds in which there are positive reactors, only animals whose serum shows no agglutination or an agglutination titre of less than 1:50 shall be included. Animals from an infected herd that show agglutination in a dilution of 1:100 are positive reactors, and furthermore, any trace of agglutination in dilutions of 1:50 in the blood test of cattle from herds in which there are positive reactors indicates possible initial infecton, and, in the opinion of the members of this committee, should not be included.

Fourth: If it is found that no reactors are present in the entire herd of adult cattle from which the shipment is to be made, the live stock sanitary official is justified in endorsing the test certificate without any reservation. If reactors are found to be present, the endorsement should be supplemented by the statement that the animals come from a herd showing some reactors and should be re-tested in twenty to thirty days.

J. W. Kalkus, Chairman.
Edward Record.
C. M. Haring.

* Report of a committee of the State Live Stock Sanitary authorities of California, Idaho, Nevada, Oregon, Utah and Washington, November 22, 1928.

FACTS REGARDING BANG ABORTION DISEASE*

1. It is now a controllable disease.

2. The serological tests are sufficiently accurate to serve as a basis for freeing herds of the disease.

3. Clean herds so indicated by the agglutination tests, carefully applied and interpreted, can be maintained clean year after year.

4. Herds thus maintained show a breeding efficiency far above that which is recorded in herds which contain many animals that react to the serological tests.

5. Other things being equal, herds that are entirely clean are the best breeding units that can be obtained. Those that consist entirely of reactors, carefully culled, can be made to show fair breeding efficiency. Those consisting of reactors and non-reactors *in association* show a minimum breeding efficiency as compared to the other two groups.

6. Clean units may safely be recruited with young stock from infected units provided the serological tests are made the basis of the transfer. Thus the infected unit may often be made to serve as a source of some income until the clean unit can be established, and the blood lines that the breeder prizes can be easily perpetuated.

7. Testing Bang abortion disease out of a herd or unit and keeping it out is the only known, successful way to handle it.

To the practicing veterinarian who must assume the lion's share of the responsibility in helping breeders to establish and maintain herds free from Bang abortion disease, we recommend:

1. That he thoroughly familiarize himself with the newer knowledge regarding the disease, so that he is equipped to draw blood samples required in making the serological tests; to interpret the test charts and relate each test to the handling of the individual concerned; and to guide the breeder in the direction of a clean herd.

2. That he courageously refrain from recommending to his clients easy palliative measures which "may do some good" in preference to more difficult ones which are known to be successful.

C. H. Case, C. P. Fitch,
M. F. Barnes, R. R. Birch,
Geo. H. Hart.

* From Report of Committee on Abortion, United States Live Stock Sanitary Association, 32nd Annual Meeting, Chicago, December 6-8, 1928.

Ascites in cattle due to renal or hepatic disorders is, according to Seagraves, being temporarily relieved by the use of calcium chlorid. This form of medication is worthy of trial in such cases.—*Cornell Vet. Vol.* 21, No. 1.

Up to the present, the essential basis of dealing with infectious abortion in cattle is by precautionary measures, the testing of suspected animals, methods of sanitation, and isolation, methods of sexual hygiene, supplemented by the judicious use of vaccines.—McGilvray.

Feeding has little influence upon the vitamin D content in cow's milk but it is very probable that the general physical condition of the cow is an important factor. The systematic use of cod liver oil usually increases vitamin D in the milk. It would be advisable to feed cod liver oil to sows, cows, mares, ewes, or bitches in which there has been a tendency to rachitis in the young.

Since young flukes spend a part of their life history in the snail, it is especially important to drain, fill, or fence off wet areas in which snails breed. Snails may also be destroyed by the application of copper sulphate, as a spray or powder, to infested pastures.

Besides killing many sheep and cattle annually, flukes cause an annual loss of fully $300,000 because of damage to livers as a food-commodity. These parasites, sometimes incorrectly called leeches, are spreading from the West Coast, Rocky Mountain States, and South toward the East and North.

Infectious Necrotic Enteritis of Swine*

By A. T. KINSLEY, Kansas City, Missouri

INFECTIOUS necrotic enteritis designates a diseased condition in swine that is manifested by inflammation of varying intensity and extent, primarily involving the mucosa of the large intestine. Although this disease has been recognized for years, it was not differentiated from hog cholera until 1907. There has been some confusion relative to this malady because of the different names applied. Thus, the condition has been designated intestinal necrobacillosis, pig typhoid, bacillary hog cholera, swine typhus, etc. Although there are some objections to the name "Infectious necrotic enteritis," it is more applicable than any other and has been quite generally accepted.

Occurrence

Pigs weighing 30 to 50 pounds are most frequently affected with infectious necrotic enteritis, although it may occur in recently farrowed pigs and in aged hogs. Breed appears to play no part as regards susceptibility to this disease. The condition of the swine undoubtedly is a factor in susceptibility; however, shotes in the best of condition become affected. Climatic conditions have little or no influence in the prevalence of infectious necrotic enteritis, although the disease appears to be more common in late spring and early autumn, probably because that is the season when the majority of the pig crop is at the most susceptible age. The conditions under which the swine are maintained with regard to sanitation have an influence upon their susceptibility to the infection; however, the disease may prevail in swine that are kept in clean, sanitary quarters. Food seems to have little, if any, influence upon the prevalence of the disease, although insufficient or poor quality of feed would no doubt predispose to this disease, the same as to any other diseased condition.

* Presented at the annual Veterinary conference, Kansas State Agricultural College, Feb. 6-7, 1929.

Equals Cholera in Importance

The importance of *B. suipestifer* infection is not fully realized by swine breeders and feeders, and some veterinarians do not appreciate its seriousness. It is very probable that the economic loss incident to the *B. suipestifer* is as large as the loss due to cholera. It is further evident that the infection is not only becoming more widespread but also is becoming more virulent.

A large percentage of the losses of swine from one to three weeks after vaccinating with anti-hog cholera serum and virus is due to *B. suipestifer* infection. Unfortunately, these post vaccination losses are tending to discourage vaccination against cholera.

Etiology

The *B. suipestifer* has been demonstrated beyond any reasonable doubt to be the primary causative factor of infectious necrotic enteritis. Many other microbian invaders occur in the affected tissues of infected swine and are probably of some importance. The actinomyces necrophorus occurs quite regularly in the deeper layers of necrotic tissue, according to Murray and others; however, these microorganisms are quite probably only secondary invaders. Various other microbian agents of intestinal origin are usually demonstrable in the lesions of infectious necrotic enteritis, but are not significant as primary etiologic factors.

Symptoms

Infectious necrotic enteritis varies in intensity and morbidity, depending upon the susceptibility of the affected swine and the pathogenicity of the *B. suipestifer*. Thus, the disease may be acute or chronic. An acute septicemia caused by the *B. suipestifer* is characterized by a high temperature, inappetence, arched back, frequent urination and blue belly; however, the usual infection results in a subacute or chronic malady. In general, it may be stated that the symptoms of infectious necrotic enteritis are variable,

and the intensity of the symptoms manifested is not proportioned to the intensity and extent of the lesions. Hogs apparently in the best of health may reveal lesions indicative of a chronic infectious enteritis on autopsy, while swine manifesting the usual symptoms of this disease may show very limited lesions on autopsy. The infection acts rapidly and is highly destructive in some cases but is slow going and rarely fatal in other cases.

This disease may affect only a few animals in a herd or a few animals may be affected at one time, and they either die or recover and others in the same herd become infected, the disease thus ultimately affecting all swine on a given farm. In other instances practically all of the swine show evidence of the disease at the same time.

The affected animals are dull and separate themselves from the other swine. The appetite is diminished, although it may not be noted by the care-taker. In some outbreaks the first evidence of the disease noted is dullness. The owners will report that a large percentage of the hogs lack activity and appear dull and depressed. As the disease progresses, digestive derangements become more evident and are manifested by irregular appetite and diarrhea. The affected individuals at this stage appear unthrifty, have rough coats and arched backs. The fecal discharges are quite fluid and of variable color, depending upon the feed.

The affected individuals become emaciated, thin and weak and may die of exhaustion or they may ultimately recover. The temperature varies from normal to 105° F. or 106° F. during the active stage of the disease, but in the later stages it is not unusual to record subnormal temperatures. In uncomplicated cases, no pulmonary disturbances are manifested.

Lesions

The lesions resulting from *B. suipestifer* infection depends upon the acuteness of the attack. In the septicemic type of this malady there is usually a bluish discolorization of the skin on the center surface of the abdomen. In some cases there is a marked icterus. Hemorrhages are prevalent in all tissues. Lymph glands will be tumefied, edematous congested and hemorrhagic. The spleen is usually engorged with blood and may be very much enlarged. Nephritis and extensive hemorrhage into the kidney occur.

The lesions in the acute cases of infectious necrotic enteris consist of a marked congestion and in some instances hemorrhagic inflammation of the mucosa of the large and less frequently of the small intestine and stomach. The lymph glands related to the affected mucosa will be tumefied edematous, congested and in some cases hemorrhagic.

The chronic type of infectious necrotic enteritis is manifested by emaciation and rough coat. There is usually an excessive quantity of serum or sero-gelatinous fluid in the peritoneal cavity. The serous covering of the affected portion of the intestine is usually dull and lusterless. The characteristic lesion of chronic infectious necrotic enteritis consists of an inflammation with an accumulated exudate and later necrosis of the intestinal mucosa. In some cases the lesions indicate that the infection begins in the lymphoid tissue (Peyer's patches and solitary follicles) of the intestinal mucosa near the ileo-cecal valve. The lesions may be found in any portion of the digestive tract including the stomach, but are usually more extensive in the intestine.

In the beginning, the lymphoid areas become congested and tumefied and later undergo necrosis. In other cases the lesions are apparently not confined to the lymphoid tissue, but invade the mucosa, which becomes congested, tumefied and necrotic. When large areas of the mucous membrane became involved, the lesion appears as a diphtheritic inflammation because of the adherent necrotic tissue. In some cases the entire intestinal wall appears thickened and friable, due to the accumulated necrotic tissue. Some cases are observed in which the necrotic tissue has sloughed, leaving the intestinal wall relatively thin and inelastic.

In prolonged cases, or the chronic form of this disease, the so-called "button ulcer" is of common occurrence. This lesion occurs when the infection is apparently localized in

solitary follicles or Peyer's patches and the inflammatory and necrotic processes extend by continuity, the necrotic tissue remaining intact or accumulating as dirty brown masses with raised margins. Microscopically the surface epithelium in the affected areas and the lymphoid tissue are found to be in various stages of degeneration and disintegration. The degenerated and dead cells commingle with the coagulated inflammatory exudate and appear upon the surface as an adherent mass—the "button."

The mesenteric lymph-glands through which the lymph passes from the infected mucosa are tumefied and may be congested and hemorrhagic. In the subacute or chronic cases the central portion of the lymph glands may be necrotic. The peritoneum adjacent to the involved intestine is invariably affected with a subacute or chronic inflammation. The peritoneal inflammation is manifested in the early stages by an excessive outpouring of serous fluids, but as the process continues there is a tendency to organization and limited fibrous proliferation which is prone to produce adhesions.

Differential Diagnosis

B. suipestifer septicemia may be confused with cholera or hemorrhagic septicemia. The outstanding symptoms of suipestifer septicemia, i.e., blue belly, frequent urination, and dark colored urine, combined with the characteristic lesions, consisting of tumefied spleen and nephritis, should be sufficient evidence upon which to base the diagnosis.

The acute type of infectious necrotic enteritis may be confused with enteritis resulting from ingestion of some chemical irritant, particularly salt or brine. The differential diagnosis of acute infectious necrotic enteritis is dependent upon proper interpretation of history, symptoms and lesions. In chemically induced enteritis practically all swine in the lot will be affected, whereas in the case of suipestifer enteritis a relatively small percentage of the herd will be affected and invariably there will be some chronic cases which would indicate the acute malady was due to the same cause.

Diagnosis of the chronic form of this malady requires an autopsy of one or more cadavers. The characteristic lesion upon which judgment is based occurs in the intestine and consists of an inflammation in which some of the involved tissue has become necrotic and is adherent to the intestinal mucosa. The finding of these lesions, when coupled with a definite history of the outbreak and observation of the leading symptoms — irregular appetite, diarrhea, dullness and variable temperature, is usually sufficient evidence upon which to make a positive diagnosis.

Prognosis

A guarded prognosis should be given in all forms of *B. suipestifer* infection. The septicemia form of the malady is practically 100% fatal. Fortunately the percentage of swine in a herd affected with this type of the disease is usually small. This condition is frequently responsible for extensive losses of serum producing swine.

The acute enteric form of the malady is highly fatal but as a rule this form of the disease, like the septicemic form, affects only a small percentage of the herd.

In the chronic form of the disease the percentage of deaths will be relatively small, but the loss of condition of the affected animals may produce an extensive economic loss.

Control

Sanitary requirements are frequently ignored by the hog feeder and breeder. Although infectious necrotic enteritis may occur in swine that are maintained in clean pens and properly housed, it is far more prevalent in swine that are kept in mud and filth. There is a tendency for the larger feeders to keep too many hogs in one lot, a fault that is conducive to the rapid spread of any infectious disease. The men who are most successful in swine husbandry watch their herds carefully and at the first indication of any defect or disease isolate the affected animal. Quarantine is the first principle in controlling the spread of infection and to be most effective isolation should be absolute.

Rigid enforcement of quarantine regulations in the early stages of infectious ne-

crotic enteritis will materially diminish the losses occasioned by this disease. Slop foods of good quality should be provided for affected animals. They should be kept in comfortable quarters and the dropping should be gathered daily, if possible, disinfected and properly disposed of. All dead animals should be burned or buried sufficiently deep and limed to destroy infection.

Prevention

The *B. suipestifer* probably does not inhabit the intestine of normal swine; therefore, its presence signifies a carrier or a diseased animal. The organism is eliminated in the fecal discharges, and soils, feed and water are thus contaminated. Pens, lots, sheds and runs that have been occupied by diseased animals should be thoroughly cleaned and disinfected before other animals are placed therein. Since intestinal parasites predispose to infection with the *B. suipestifer,* all swine should be periodically "wormed out."

The *B. suipestifer* produces an endotoxin and a bacterin has been successfully used not only in this country, but also in Europe, thus Pfeiler and Kohlstock report the control of *B. suipestifer* infection in swine on infected farms by the use of a suipestifer vaccine. Hutyra and Marek obtained good results by regulating the hygienic conditions and the injection of phenolized cultures of *B. suipestifer.*

The losses of swine due to suipestifer infection on a large hog ranch in Nebraska were diminished to a minimum by two inoculation of the suckling pigs with a suipestifer bacterin. Many instances could be cited of the apparent value of vaccination of swine against suipestifer infection. However, in the prevention and control of this malady and any other disease it is evident that due credit should be given to feeding and sanitation as well as to vaccination. It should also be definitely understood that vaccination with suipestifer bacterin, though quite effective as a preventive agent, is of little curative value, particularly in the acute enteric or septicemic form of the malady.

Recommendations

1. On farms where there have been losses of swine due to infectious necrotic enteritis, new lots should be provided if at all possible. All pigs, when about two weeks of age, should be vaccinated with a properly prepared *B. suipestifer* bacterin. A second dose of bacterin should be given about the time the pigs are weaned and at the same time it is advisable to administer a reliable vermifuge.

2. In diseased herds all apparently healthy swine should be removed from the diseased swine and placed in lots not recently occupied by swine. If the disease is chronic, vaccinate all swine, both healthy and diseased, with suipestifer bacterin, and repeat on the fifth to the seventh day.

A third injection will probably be of value in the diseased lot.

In addition to the separation of the diseased from the healthy, and vaccination, proper feeding is of importance. All swine should be given a liquid or slop diet, preferably of ground oats or barley. If neither of these are available, use shorts. The slop should be made thin and alkalined with caustic soda or lye. Make the slop so thin in the beginning that the swine will get quite hungry between feeds, then gradually increase the feed in the slop, but always keep the hogs hungry. The slop diet should be continued from 7 to 10 days in the healthy lot and in the diseased lot until the swine have practically recovered. Some practitioners believe that the addition of an intestinal antiseptic to the slop is of value. If such an agent is not used in excess it will do no harm and may be of value. Chiorin solution is claimed by some to be almost a specific.

In concluding, it is hoped that you have been impressed with the importance of *B. suipestifer* infection in swine, particularly in its relation to post-vaccination losses. It is our opinion that, by proper swine management, sanitation and vaccination, suipestifer infection can be controlled and the losses reduced to a minimum.

RESULTS OF IMMUNIZING BABY PIGS AGAINST CHOLERA

Illinois Experiment Station

Year	Baby pigs immunized	Pigs exposed market time	Died of cholera	Per cent died of cholera
1923	643	304	36	11.84
1924	260	185	13	7.02
1925	76	45	1	2.22
1926	442	213	6 (4 from one litter)	2.81
1927	823	373	4	1.07
1928	776	538	2	.37
Total	3,020	1,658	62	3.74

1. Over a period of six years 3,020 baby pigs between the ages of one and nine weeks were injected with potent anti-hog cholera serum and virus. A majority of the pigs were treated at four weeks of age with fifteen cubic centimeters of clear concentrated serum and three cubic centimeters of virus.

2. One thousand six hundred and fifty-eight of the baby pigs immunized were exposed to cholera at market age by the injection of five cubic centimeters of virus or by pen exposure with cholera sick hogs.

3. In four separate groups, including 45, 213, 373 and 538 pigs immunized at one month of age, 2.22 per cent, 2.81 per cent, 1.07 per cent, and .37 per cent respectively proved susceptible to hog cholera at market age; while in two separate groups of 304 and 185, 36 or 11.84 per cent and 13 or 7.02 per cent, respectively, proved susceptible to cholera.

4. The cause of cholera susceptibility in pigs following immunization is a matter of conjecture. So far as can be determined the age of the pig at the time of immunization is not in any definite way related to the length of immunity. Likewise the potency of the serum and virus used to immunize pigs seems unrelated to cholera susceptibility observed at market time.

5. The possible effect of other diseases on hog cholera immunity established by potent serum and virus, was suggested in the 1923 experiments, and again in 1924. The presence of an acute respiratory infection was recognized in both groups at or about the time of cholera exposure, while in 1923 roundworms and thorn-headed worms caused a heavy mortality in pigs treated before market time. In 1923 and 1924, 7 to 12 per cent of pigs exposed proved susceptible to cholera. The 1924 group did not suffer from intestinal parasites, and animals showing a temperature over 104 degrees were not exposed.

6. The part which subacute diseases other than cholera might play in rendering serum and virus treated pigs susceptible to cholera, two to eight months following immunization has been vaguely suggested at autopsy in different herds coming to our attention. Paratyphoid and necrophorous infections, together with attacks of bronchitis and parasites, have been regarded as possible factors in altering the immunity established by serum and virus.

7. In our experiments baby pigs that were treated with potent serum and virus and kept free from other diseases retained their immunity to cholera until market age in a high per cent of cases. It is also recognized that the immunization of baby pigs at one month of age has certain advantages in reducing cost of labor and serum. Notwithstanding that the experimental results indicate that baby pigs can be immunized with considerable success, the practice is not generally recommended by veterinarians as a procedure to replace immunization following weaning. It must, however, be conceded that the technical results indicate that baby pigs may be immunized under favorable conditions with little danger, yet the place of widespread baby pig immunization under average farm conditions remains to be established by field results over a period of years.

8. It is suggested from our studies that the maximum advantages in the control of hog cholera by immunization may be obtained only when potent serum and virus are properly employed in conjunction with the successful diagnosis and treatment of other diseases. Without

discrediting the value of potent serum and virus, in suppressing outbreaks of hog cholera, it is believed that other diseases constitute a common complicating factor of growing importance. The difficulties involved in the differential diagnosis of swine diseases may be hopefully dispatched with the aid of competent veterinary services supported by laboratory assistance. As the result of our studies the more careful distribution and cautious use of virus in herds suffering from diseases other than cholera, as well as in apparently healthy, yet subacutely infected animals is suggested.

Urbana, Ill. Robert Graham,
Frank Thorpe, Jr.,
R. L. Hectorne.

BREEDING DIFFICULTY IN SWINE

Suggestions relative to the best method of procedure in the following herd of swine will be appreciated.

Approximately 100 brood sows in a herd of 200 have failed to conceive and in several litters from the sows that did conceive, there has been from one to three small runty pigs. In most instances, the runts have died within a few days after farrowing.

In many of the sows that failed to conceive there has been a muco-purulent or purulent discharge during the estral period, and there is at least one sow that has been evidencing a discharge almost continuously for several weeks.

From the sows that conceived and farrowed there has been saved an average of 8.5 pigs per sow.

It has been the intention of maintaining about 200 brood sows on this farm and the question is, will it be reasonably safe to retain all the brood sows that have conceived and produced pigs this spring? There is on this farm several rather valuable boars, can they be retained and used for breeding purposes?

Information relative to the most economic method of procedure will be appreciated.—C. E. S., North Carolina.

Reply: It is evident that this herd of swine is affected with some genital infection. The failure to conceive of approximately 50% of the sows, the vaginal discharge from the non-breeders during the estral period, and the occurrence of some runts in litters from the sows that did conceive supports the diagnosis of genital infection.

The method of procedure will of course, depend on several factors. If the brood sows are not pure-bred, it is probable that all of the non-breeding sows should be fattened and sold for pork. It might also be advisable to dispose of all the sows that produced runts as those sows are probably also infected.

Unless the boars evidence infection by the occurrence of a discharge from the prepuce or abscess formation or other lesions in the testicles or other genital structures, they can probably be retained for breeding purposes provided a period of six weeks or two months has elapsed since the last service.

Further suggestions by readers of VETERINARY MEDICINE are solicited for publication.—A. T. K.

It is in the power of man to cause all parasitic disease to disappear from the world.—Pasteur.

Of the eight hundred ninety-one primary outbreaks of hog cholera in Maryland in 1928, 825 were due to bones, rinds or scraps of infected pork or water in which such product had been washed, in garbage, table scraps, kitchen swill, etc., that was fed to swine.—I. K. Atherton.

Of the 47 secondary outbreaks of hog cholera in Maryland in 1928, in 37 cases the spread of the infection was due to permitting hogs to run at large, to line fences or to the movement of such animals for various purposes. Three were apparently due to unburied carcasses of hogs that had died of the disease. Two were apparently due to drainage from nearby pens, while in five cases no history was obtained on which to base an opinion as to the source of infection.—I. K. Atherton.

Cockle-bur Poisoning of Swine

By A T. KINSLEY, Kansas City, Missouri

THE loss of hogs from cockle-bur poisoning is rather a common occurrence and is quite prevalent every spring of the year in all sections of the country where this plant occurs plentifully. It would seem that the cockle-bur is sufficiently common that it does not need any general discussion. According to botanists there are some twelve to fifteen different species of the cockle-bur. The cockle-bur is a pest; it is not only destructive to pigs, but also causes losses in calves and is a parasite on the land and should therefore be eradicated wherever it is possible to do so. It may be of interest to the readers of VETERINARY MEDICINE to know that a process of extracting oils from the cockle-bur seed has recently been perfected and by the manufacturer it is claimed that the oil is useful for paints and also as a food for man.

The losses of live stock due to cockle-bur poisoning varies at different seasons, the extent of the loss apparently depending upon varying toxicity of the plant. Sheep growers complain of serious losses occasioned by the burs becoming entangled in the wool. Similar losses also occur in the mohair of angora goats. The burs not only cause losses due to entangling of the wool or mohair, but also produce irritation of the stomach, resulting in inflammation which may become so aggravated and extensive that the animal's life is sacrificed.

Some cases of choking in pigs and calves have been observed from cockle-burs becoming lodged in the throat. A few cases have been observed in which death has been occasioned by the cockle-bur massing together and obstructing the intestine.

The most serious difficulty and extensive losses occasioned by the cockle-bur are due to the consumption of the young cockle-bur plant. This loss usually occurs in early spring. Many instances have been investigated in which large numbers of pigs have died, the principal symptoms evidenced being spasms and convulsions, which, upon investigation, had been the result of the eating of a relatively few young cockle-burs.

Feeding experiments have been conducted in which the young cockle-burs were collected and fed while fresh to pigs. In most of these experiments, it has been found that from ¼ to ½ lb. of the young cockle-bur is sufficient to destroy the life of a 30 to 60 lb. pig in from 6 to 24 hours. Professor Pammel, botanist of the Iowa State College, has reported the results of several investigations and the statement is made that the young cockle-bur contains a poisonous substance belonging to the glucocide group of chemicals. In at least one feeding experiment, the young leaves were carefully removed from the stem of the young plant and the bur fed to pigs. These young leaves kill pigs more promptly than the entire plant or than the plant plus the bur, which indicates that the poisonous principle of the young plant is found in the leaves (and cotyledons) just as the plant comes out of the ground.

Symptoms

The symptoms of cockle-bur poisoning, like symptoms of other chemical poisonings, vary according to the amount of the poisonous substance consumed. Usually, the first symptom is uneasiness, the pigs frequently getting up and down as if colicky. There is distress and usually vomition. Unless the pig dies within a short time after these symptoms are manifested, there will be a marked diarrhea, the animal rapidly becoming more depressed and finally lapsing into a stupor. During this stage there is usually periodic convulsions. The usual course of the disease is from 12 to 24 hours, although, if large quantities of the leaves are consumed in a relatively short time, a pig may die within a few hours. If only a very small quantity of the leaves is consumed, then the disease is less severe, and the affected animal may show evidence of colic,

distress, may or may not vomit, and there may be only slight diarrhea, and ultimately recover. In such cases there is rapid loss of flesh and it will take several weeks for the animal to regain its former condition.

Prevention

The successful prevention of cockle-bur poisoning in pigs or other animals is dependent upon preventing the animals from consuming the young weeds and this is probably best done by eradication of the cockle-bur. It is claimed that one of the two seeds contained in the cockle-bur sprouts one year and the other seed sprouts the following season. If the seasons are especially wet, the weather warm and favorable, both seeds may sprout the first year. By keeping these facts in mind, eradication of the cockle-bur should not be difficult, as the reproduction of the plant is absolutely dependent upon seed. If it is not possible to eradicate the cockle-bur it is certainly advisable and economical for the swine producer to confine his swine in lots or pastures where no cockle-bur exists until the plants are rather well developed, as they are poisonous only during the few days they are coming out of the soil.

Treatment

The treatment of pigs affected with cockle-bur poisoning is not successful. Affected pigs may be given milk, but they will rarely eat or drink.

SOME SUPPOSED POISONING PLANTS FROM NEBRASKA

Dr. L. A. Moran from Ainsworth, Nebraska, writes to VETERINARY MEDICINE as follows:

"'Under separate cover I am mailing you three varieties of plants or weeds, taken from a hog pasture where the hogs have been dying, showing symptoms of a form of poisoning. Have your botanist find out what he can about these plants and answer through your columns.

Reply.—The plant with stickers is the buffalo bur, *Solanum rostratum;* the larger leaved plant is bracted vervain, *Verbena bracteosa,* and the tall plant is one of the pigweeds (Acnida). The only possible poisonous weed is the pigweed.

I doubt whether the hogs would eat the Buffalo bur, a plant with yellow potato-like flowers, spiny leaves and stems; the fruit, a berry, is surrounded by the prickly calyx. The plant, no doubt, is toxic, as many of the green parts of this family are. They contain gluco-alkaloids. I have never seen cattle or hogs eat this plant. The bracted vervain is a common plant of the verbena family with small purple-bluish flowers. Cattle and all kinds of animals seem to avoid this and other plants of this genus like the blue and hoary vervain of pastures. There undoubtedly is some principle in the plant distasteful to live stock. The pigweed (Acnida) is not, so far as I know, poisonous. A Nebraska correspondent reported to me some years ago that our common pigweed, *Amaranthus retroplexus,* produced bloat. If the trouble with these hogs is due to plant poisoning, it is most likely due to some plant other than those sent to me.

Ames, Iowa. L. H. Pammel.

SMUTS NOT POISONOUS

Dr. T. G. Fultz, of Pella, Iowa, writes as follows:

"I am sending you under separate cover a sample of wheat that one of my clients brought in to me and he would like to know if the affected wheat would be injurious for hog feed. His wheat was affected with smut this year and he has tried cleaning it and finds the lighter grains will be blown out, but some of the heavier ones remain.

"Please let me know as soon as possible, as this man has about 500 bu., and if he can feed it with safety it will be the only use it can be put to."

The sample sent is affected with stinking smut, or bunt, of wheat. Stinking smut itself, or bunt, or any of the smuts, for that matter, are not injurious by themselves excepting when live stock consume a one-sided ration of this material in large quantities. If fed in large quantities in a one-sided ration, it is injurious. If fed in small quantities, with other feed, it can be used without danger.

Ames, Ia. L. H. Pammel.

EXPERTS AGREE ON VENEREAL NECROBACILLOSIS

I am having considerable trouble with sheep. I have diagnosed the condition as infectious vaginitis due to the *Bacillus necrophorus.*

These sheep were all bought from one man, on contract, last fall. They were herded together for some time before and after purchase. They have been fed on four different places by experienced feeders. The ration has consisted of alfalfa hay or chaff, and corn or oats. Plenty of water and salt.

A short time, ten to fifteen days, after "bucking up" the rams were seen to be affected. The penis was protruding and sores or ulcers appeared on the penis and prepuce. Urethritis developed in some cases and animals died. Death was apparently due to uremic poisoning due to stricture or closing of the urethra by purulent discharge.

In January the ewes began to exhibit symptoms of infection. Purulent, gangrenous vaginitis developed in a large number of cases. A great number of ewes aborted. Some of these recovered. In those cases where abortion did not occur, the ewe died.

Postmortem examination of the ewes affected reveals a purulent, gangrenous vaginitis and metritis. A few of these sheep now show symptoms resembling "foot rot."

Can you give me any idea as to the etiology, symptoms, treatment and prognosis of this condition? Is the condition more apt to infect the rams or the ewes first? There is no doubt in my mind but what the condition is spread by coition. Would this condition be carried from one year to another by diseased animals, so that it might pass unnoticed in the ewes or rams?—J. W. T., Utah.

Reply.—You have given a very excellent description of venereal necrobacillosis as it has been frequently seen in this western country. I suspect that Wyoming has had more trouble with this infection than any other western state, but Colorado sheep men have frequently reported it. You will find the disease mentioned in the U. S. Bureau of Animal Industry Bulletin No. 1155, entitled "Diseases of Sheep."

No general flock treatment seems to have been of any value except that when the disease appears, breeding should be stopped. Each animal must be treated separately and treatment consists in curetting the necrotic material from the surface of the ulcer and then swabbing with undiluted tincture of iodin. Doubtless other antiseptics are of value but we have known of many instances where they have failed and have always come back to the simple treatment mentioned above. Separation of the affected animals from the unaffected should always be practiced.

Since foot-rot is due to the same organism, *Actinomyces necrophorus,* it is not surprising that it is also present.—I. E. Newsom.

Reply.—The first thing to do is to have a bacteriological examination made, to see if *Bacillus (Actinomyces) necrophorus* is present, or just *Staphylococcus albus.* If the first showed up, report it to federal authorities, as that would be lip-and-leg ulceration. If foot-rot treat with any antiseptics, such as potassium permanganate 4%; any of the aromatic disinfectants. Run all through a vat containing about four inches of the disinfectant. The kind is not so important as the thoroughness with which it is applied.

I have worked out a line of treatment for foot-rot and mixed infection that is very efficacious but it cannot be used indiscriminately, and should be only used by a veterinarian after a careful diagnosis. After one has several experiences with this trouble in sheep he will be rather cautious about rendering a prognosis. I treated over 6,000 head so affected last year and I know whereof I

speak when I say be cautious in your prognosis.—E. T. Baker.

Reply.—The case I think has been properly diagnosed by the inquirer.

In several different areas in Missouri there have been rather extensive outbreaks of anovulvitis in heifers. I have not this season observed any disturbance in sheep caused by the *Bacillus* (*Actinomyces*) *necrophorus,* but it is my judgment that this infection periodically occurs in different locations. At one time it affects the lips and legs, and other times produces ano-vulvitis. Why it varies in this manner, I do not know.

A treatment that has usually been successful in our hands consists of curetting the necrotic tissue away and applying some reliable antiseptic, such as tincture of iodin, or a solution of copper sulphate. This condition may have been spread by coition, but I doubt it. It probably affected the rams first and later the ewes, but I should be inclined to think there was no relationship unless the infection occurred in the ewes about ten days after breeding.

The infection is not, as a rule, maintained in the animal body for any great length of time, but persists in soil. It is very probable there will be no trouble from it until certain climatic conditions similar to those this year occur again, and then the infection will make its appearance.—A. T. Kinsley.

OAT HULLS SOMETIMES INJURIOUS TO SWINE

Dr. C. H. Banks of Tipton, Iowa, writes as follows: "I have sent you under separate cover sample of feed. Please examine for mould that might produce entritis."

I cannot find anything wrong with the samples of feed sent to me. Cultures do not give anything. Possibly the trouble is due to the irritation from the husks of the oats. Sometimes oat husks produce mechanical injuries to the stomach and intestine in hogs.

Ames, Ia. L. H. Pammel.

"DRYING UP" OF SHEEP

A condition designated as "drying up" is of rather common occurrence in sheep. The malady occurs in sheep in feed lots and in sheep that are on the range, particularly in those bands of sheep that are driven rather long distances without water from one range to another or from range to market. There was some 40 cases of "drying up" observed in a band of 3,200 sheep that were driven in February a distance of 50 miles from the range to the railroad. Practically all of the 40 died between the time of loading and the first stop for feed, water and rest. About 20 lambs in a band of 1,900 died of this malady during a period of forty days full feeding.

Although "drying up" is not a serious malady, the losses are sufficient that the cause and prevention should be given consideration. "Drying up" is characterized by depression, inappetance, varying degrees of guantness, and a tendency of the affected animal to stand by the water trough, if water is present. Autopsy reveals an apparent excessive dryness of the content of the digestive organs.

The cause of this malady has not been ascertained but it is apparently the result of insufficient water, but it is difficult to understand why it occurs in sheep in feed lots in which there is an ample quantity of water.

Affected sheep usually recover, provided they are drenched with one or two quarts of water in the early stages. In many instances one treatment with water suffices and it is rare to have to drench for more than two days in succession. Affected animals that are not treated until the third or fourth day, usually die.

What is the condition? Any comments by readers of VETERINARY MEDICINE particularly as to cause and prevention, will be appreciated.

Ten Oregon counties report a loss of $25,000.00 worth of sheep and goats in 1928, due to the depredations of dogs.

The Post-Mortem Poultry Inspection

Service of the Bureau of Agricultural Economics
By ROB R. SLOCUM, Washington, D. C.
Senior Marketing Specialist, Bureau of Agricultural Economics, U. S. Department of Agriculture

THE post-mortem inspection of poultry for condition and wholesomeness is a live question both to the poultry industry and to the veterinary profession at this time because of the introduction in Congress of several bills intended to provide in greater or less completeness for such inspection of the poultry shipped in interstate commerce. The poultry industry is deeply, one might almost say vitally, interested in this question because compulsory inspection applied to all poultry in interstate commerce would require serious readjustments in the marketing process and would make necessary the development of a suitable technic in the preparation of poultry for shipment and for storage in a drawn state instead of in the undrawn state which is the common method of handling today. Inspection applied only to a part of the poultry or poultry food products moving in interstate commerce would, on the other hand, be likely to cause sharp differences of opinion to develop between different elements in the poultry trade because it would make competition more difficult for those compelled to submit to inspection as contrasted to those exempted from it. The veterinary profession may be assumed to be keenly interested both because of the nature of the work and the technical aspect of the subject and also because of a new field of employment offered by it.

While there is no great interest in the matter on the part of the general public, except in certain localities where the subject has received considerable agitation, there can be no doubt that in the past a certain amount, probably not a large percentage of the total, of poultry unfit for human food has found its way on to the tables of our people. No one will question that such poultry should be excluded from human consumption. The question is one deserving of the best and most constructive thought both of the poultry industry and of the veterinary profession.

It may be surprising to some to know that there is now in operation at least two post-morten poultry inspection services, one conducted by the City of Chicago and the other by the Bureau of Agricultural Economics. It is the latter service with which the writer is particularly familiar and it is that service which he will attempt to sketch broadly in this article.

The service is new. It was first inaugurated in March, 1928, to assist a canner of a poultry food product to ship his goods into Canada from which such products had been barred for about seven years owing to the requirement that the only canned poultry products eligible to admission into that country are those prepared from inspected poultry and accompanied by a federal certificate. Later this service was extended to a number of other canneries in the Eastern States until at the present writing eight canning establishments and two restaurant chains are having the poultry inspected which they use.

The work is carried on under the authority vested in the Secretary of Agriculture which enables him to investigate and certify the class, quality and condition of perishable farm products including poultry. Under this authority the Secretary has promulgated regulations governing the work and the Chief of the Bureau of Agricultural Economics has issued instructions with reference to the disposal of diseased poultry carcasses.

The inspection work is entirely voluntary so far as the Department of Agri-

culture is concerned. By this is meant that the service is extended only to those who apply for it and who are able to meet certain necessary conditions.

The first condition is that the plant of the applicant and its equipment for the work must be such as will in the judgment of the Bureau, permit the handling and preparation of the poultry to be carried on in a sanitary manner. Secondly, the applicant must be willing to meet the full cost of the service inasmuch as the Bureau has no funds available for this work. In addition some suitable agency such as a State Department of Agriculture or some trade organization must be located which will be willing to cooperate with the Bureau in the work and which has authority to act as the collector and disburser of the money collected to defray the cost of the service. This procedure is necessary because if the money were collected by the Department of Agriculture it would have to be conveyed into the Treasury of the United States and would not be available to pay the expenses of the service. The applicant must likewise agree to have all the poultry used in the plant inspected.

The inspectors employed in the actual inspection of the poultry must be properly qualified veterinarians to comply with the regulations of the Secretary of Agriculture governing this work. They are employed by the agency cooperating with the Bureau and are paid by it from the moneys which it collects from the plant to which the service is extended. The inspectors work under the direct supervision of and are responsible to a supervising inspector who is a responsible representative of the Bureau.

In the actual conduct of the work, the poultry used, because it is generally frozen stock, is first thoroughly thawed in tanks of water so that it is in suitable condition for examination. After singeing in a hot gas flame, each carcass, with head and feet attached, is placed in an individual pan which forms part of the moving top of the inspection table. The carcass is then opened so as to expose the entire body cavity. It then passes in front of the inspector, who makes a rapid but careful examination of the carcass and the viscera to determine whether or not it is sound and in a healthy condition.

If the carcass is found to be diseased to the extent which renders it unfit for food or if it is unsound, it is rejected and denatured. If, on the other hand, it is found to be healthy and sound it is allowed to pass the inspector and is termed "certified." The carcass is next removed from the inspection table, the head and feet chopped off and placed on another moving top table known as the evisceration table. Here the viscera are removed and the cleaned carcass goes to the worker who gives it a thorough washing in running water. The carcass is then ready for the cooking kettles. The pans forming the table tops return to their starting point beneath the table, passing through a steam chamber, where they are automatically cleaned and made ready to receive other carcasses.

Most of the inspected poultry, is utilized in the manufacture of a considerable variety of canned poultry food products, such as boned chicken, chicken a la king, etc., or in various chicken soups or broths. When the manufacture of these products is completed in a plant having inspection, the manufacturer is permitted to place the inspection legend on the labels of the cans in which the product is packed. The inspection legend reads, "Inspected and certified by Bureau of Agricultural Economics, U. S. Department of Agriculture."

With modern equipment of the kind described and with adequate help in handling the poultry, one inspector can examine from 10,000 to about 20,000 pounds in an eight-hour day.

The class of poultry in which rejections ordinarily run highest is the mixed No. 3 poultry. Usually this is thin poultry in such poor condition that it will not sell readily and inspection shows that usually a considerable part and sometimes a very large part of it is diseased

or otherwise unfit for food. This is the class of poultry which, under the Pure Food and Drug Act, it is illegal to ship in interstate commerce. In the better classes of poultry, rejections are usually much lighter and in the highest qualities are generally very small. As might be expected, old poultry shows heavier rejections than young poultry, and fowls are hit more severely than are old cocks. Tuberculosis is the disease which causes most rejections.

Inspecting poultry for condition and wholesomeness. On the opened carcass pan before the inspector on the moving top table the viscera are carefully examined and, if found diseased in the degree specified in the instructions of the Chief of the Bureau of Agricultural Economics, are rejected for food and denatured. Note record for rejections.

Importance of Avian Tuberculosis Eradication

By ELMER LASH, Washington, D. C.
Veterinarian, U. S. Bureau of Animal Industry

A COMPILATION of statistics furnished principally by veterinarians engaged in cooperative tuberculosis eradication work indicates that avian tuberculosis exists on at least 30 per cent of the farms in more than 500 counties of the North Central States. Without further analysis, this statement may not look alarming or of much interest to the practitioner, because poultry may seem to be of but little importance.

The importance of poultry is better understood when it is compared with other branches of the livestock industry. The yearly income from poultry in the United States amounts to more than $1,000,000,000, being third in importance in our livestock industry. It is excelled in value only by the swine and dairy industries. Avian tuberculosis is causing enormous losses—just how much is difficult to estimate. However, the following will convey some idea as to its extent.

This disease, no doubt, infects the flocks on more than one-half million farms. If only two hens die each month on these farms, this would mean a loss of 12,000,000 birds annually. Placing the old country value of one dollar each on these birds, this loss would amount to $1,000,000 per month, or $12,000,000 annually. This does not include losses due to lessened egg production in affected birds, which also amounts to an enormous figure.

Veterinarians engaged in cooperative tuberculin testing of cattle for the eradication of bovine tuberculosis last year clinically inspected 202,512 flocks containing approximately 23,189,893 birds, and found 16,296 flocks diseased. They made 17,419 postmortem examinations of suspected birds and found 12,799 infected with tuberculosis.

Suggestions were made to the owners of these flocks as to the procedure to be followed for cleaning up the infection. In case the flock was of the average grade found on most midwest farms, the owner was usually advised that a new flock should be raised on clean ground and kept separate and apart from the old birds. At the close of the laying season the old flock should be carefully inspected and the visibly diseased birds killed and burned. The rest of the flock should be sold for slaughter. The old chicken house should be moved to a new location, and the old runs spaded up or plowed. These runs should be wire fenced so as to prevent the young flock from having access to them.

Because poultry range over a comparatively small area, the runs soon become thoroughly polluted with infection, and it is useless to attempt to stamp out tuberculosis in a flock without giving special attention to sanitation. The standard applied in sanitary control measures, as practiced today in eradicating bovine tuberculosis, will not prove satisfactory in controlling tuberculosis of poultry. The habits of poultry are such that extreme sanitary measures must be employed.

Large hatcheries in certain sections of the United States are buying eggs only from flocks which have been tuberculin tested. This offers quite a field for the practitioner, and, as the demand for this work is usually at a time when the veterinarian has considerable leisure, it should add materially to his practice and to his income.

More and more attention is being given to diseased poultry. The public demand for the elimination of unhealthy and unwholesome poultry from our markets is growing. A system of poultry inspection similar to

the Federal meat inspection service may soon be evolved, as several bills for such service have been introduced in Congress at this session. Avian tuberculosis is not only causing losses in poultry, but it is also responsible for many retentions in swine slaughtered at establishments under Federal inspection.

The writer, in 1921, demonstrated that it

The tuberculin test as administered by a B. A. I. veterinarian.

was necessary to eradicate tuberculosis from the poultry flocks in the Corn Belt States in order to raise swine free from this disease. Swine can be successfully tuberculin tested to determine whether they are infected by avian or bovine tuberculosis by the injection of avian tuberculin in one ear and bovine tuberculin in the other. Such a procedure is practicable, and is being followed in many sections of the Corn Belt.

Fluid medicaments can be given to fowls by the use of a dose syringe with a rubber hose extension.

Chicken lice make their home and breed upon the body of the fowl. Mites visit their host at nights and remain on the roosts in the day time. Lice are controlled by treating the infested fowls and mites are primarily controlled by cleaning and disinfecting the houses and roosts.

CLOACITIS IN HENS

Information relative to the cause, prevention and treatment of the following condition in a flock of chickens will be appreciated.

In a flock of approximately 200 birds about 15 are now affected. The principal symptom manifested consists of soiling of feathers around the vent, discharge of mucous admixed with blood. Other hens appeared to pick at the soiled feathers and particularly in those cases in which there is a bloody discharge.

This condition appears to persist and new cases are occurring and will be pleased for any suggestions.—R. L. A., Missouri.

Reply: From the description given, it is aparent the ailment is cloacitis.

The cause of this malady has not been identified. Cloacitis is apparently a specific infective disease, the causative factor usually being transmitted by coitus.

The treatment of affected birds is usually not very successful. Some beneficial results may be obtained by cleansing the area around the vent and injecting a mild astringent antiseptic such as a dilute solution of argyrol. All diseased birds should be isolated and roosters should be separated and not permitted to run with the flock until no further cases occur.

If readers of VETERINARY MEDICINE have any further suggestions relative to cause, prevention and treatment of this malady, they will be welcomed for publication.—A. T. K.

Cannibalism in chicks may be manifested by "toe picking." This condition may be due in some flocks to hunger. Toe picking also occurs in chicks that are not busy. Such conditions can usually be avoided by feeding little and often and by keeping the chicks busy picking at something such as green grass. Out door runs appear to diminish cannibalistic tendencies. Chicks that have had their feet injured by toe picking should be treated by the application of an astringent antiseptic or tar. The affected chicks should be removed from the rest of the brood.

Newer Developments in Small Animal Practice*

By CHAS. W. BOWER, Topeka, Kansas

THE "newer developments" discussed in this paper will be those that, while not new to all of you, yet are of recent origin and of sufficient merit to deserve mention.

Small animal practice is not confined to pet animals. It is true pets constitute the majority of our work, but there are other animals, valued very highly, that come in for a share of our attention. A representative of these is the fur bearing animals, including the ranched foxes, raccoon, mink, muskrats, and rabbits.

There is no other animal so closely associated with the human family as is the pet animal, particularly the dog and cat. Our profession owes to the community the protection we are able to give it in the matter of diseases of pets and other animals that are communicable to man. Further, our dealings with small animals raises the reputation of our profession, because it brings us in closer contact with the owners. Thirdly, the public is demanding care of their pets from humanitarian motives. Never before have people given the care to their dogs and cats that they are today. For economic reasons the fur bearing animal must be taken care of. This industry is rapidly growing and will in the near future constitute one of our great agricultural resources. The foregoing amply justify our giving painstaking attention to small animal practice.

Newer developments in small animal practice has been classified for this discussion into four main divisions, viz. (1) Hospitalization methods, (2) modern diagnostic principles, (3) newer therapeutics, which includes medicinal, surgical and biological, and (4) pitfalls.

Hospitalization of Small Animals

Hospitalization of small animals is many times essential and it is doubtful whether one could conduct an exclusive practice of this kind successfully without a hospital, although there are some who claim to do it. However since it is the purpose to give something that will apply to the general practitioner, the subject of hospitalization may be confined to mention of a few points.

If your small animal practice will justify a hospital of any kind you should be equipped with three wards. One for definite non-infectious cases. A second ward for cases you are not sure of, for example those which may have just a cold or may be coming down with distemper. This room we will call the observation ward. And then a third ward a strictly isolation room, for infectious diseases.

A dispensary should be handy and of course a supply of tablets, elixirs, and syrups most commonly used for small animals should be constantly in stock. A dispensary record should be kept, accurately. This is one record that I believe is most essential to any practitioner, whether he is specializing or in a general practice. I have kept a dispensary record since long before I began exclusive small animal work.

In keeping a record of medicines dispensed there are three things that should be considered. First, a record of what is dispensed. Second, to whom dispensed and third, a method of numbering or indexing so that the record may be located easily. In keeping a record of medicine dispensed I use the prescription method.

* Presented at the 25th annual meeting of the Kansas Veterinary Medical Association, Topeka, January 9 and 10, 1929.

A prescription is written for all medicines that are dispensed, numbered and filed. Then if a refill is wanted you can easily get it and you will know that the refill is an exact duplicate of the original. I firmly believe that if all the practitioners would keep records of their dispensed medicines and thereby really prescribe instead of merchandising their various formulae, the state remedy control board would have less trouble curbing the patent medicine vendor. It is bad practice to dispense in the original containers, it leads suspicion to merchandising instead of prescribing and of course as you all know, if medicines are merchandised in Kansas they must come under the Remedy Control Act.

A hospital record should be kept. This should include the name of owner, and his address in full. Name and breed of patient, date of entry, and date of discharge, diagnosis, prognosis, treatment, and general remarks, and anything else the practitioner sees fit.

Diagnostic Principles

One of the most important factors in arriving at a diagnosis is a thorough physical examination. In making such an examination first notice the general attitude of the patient. Is he listless and sleepy or is he nervous and fretful? Is he quiet or crying and whining? These are a few things that may be noticed almost at a glance and subconsciously. Next one must notice the gait. Does he walk briskly, straight or is there a wobbly swing and general muscular soreness? These notations may lead one to a closer examination and lead to a definite diagnosis. Although let me say here, do not be too quick to make a diagnosis until a thorough examination is made.

While the clinician is observing the above actions and attitude the patient is being brought into the examination room and is now placed on the table. At this time it is well to get a complete history from the owner or attendant. Ask him if there has been vomiting, straining from the bowels, or general depression. While you are getting this history you may be taking the patients temperature via rectum. Then get the pulse and respriation rate.

Next in order is a thorough external examination of the digestive tract. Start by examining the lips, then the teeth watching for discoloration, odor, and foreign bodies that may be lodged between the teeth. Examine the tongue for ulcers or discoloration. Examine the gums and inner lining of the cheeks for ulceration. With the aid of good natural sunlight or a head light inspect the pharynx and upper throat. If there should be any suspicion of stoppage of the esophagus pass a stomach tube or probang. The history from the owner may indicate that there is a choke, in which case to satisfy yourself as well as the owner this should be done.

Continuing the examination rearward we palpate the stomach region. Notice if there is extreme sensitiveness and whether pressure causes belching or nausea. Also notice if there is any enlargements in the stomach. Pass back into the bowel region and examine for sensitiveness and enlargements. Be careful in examining the cat as the kidney is floating and may be mistaken for an impaction. Farther back we will examine the anus for swellings and fistula. The anal pouches are often swollen and sometimes abscess formation has started which may lead to a fistula. Next make a digital, rectal examination, notice if there is rectal irritation, hemorrhage, obstruction, or extreme constipation. This examination should be done with a rubber glove on the hand or a rubber finger cot. Thus protecting the operator against possibility of infestation with parasites.

Next examine the respiratory system by noticing with extreme care the nose and nasal passages. See if there is natural moisture on the exterior of the nose or if there is mucus coming from the nasal openings. Notice also if there is extreme sensitiveness to the nose and if there is sneezing while examining it. Examine the tonsils to see if they are normal, swollen or abscessed. This may be

done when the pharynx is being inspected while examining the digestive system. Apply pressure to the external angle of the throat to locate swollen glands and note sensitiveness. Notice the chest for pulmonary sounds and difficult or fast breathing.

The eyes should be carefully examined. Note the color of conjunctivae, whether discharging, clear or purulent. Notice the cornea whether clear or opaque, and for presence of blood vessels. The pupil should be noticed for contractions or dilations. Likewise the ears for discharges and odors, also for the presence of ear mites.

The genital organs should be examined for presence of purulent discharge either in the male or female. The testes should be noticed for enlargements and skin irritations. The mammary glands for presence of tumors and other enlargements.

The skin should be carefully inspected for, first, gloss and brightness of the hair. Second, softness and pliability. Third, falling hair in spots. Fourth, dandruff and filth, skin irritations, etc. Indications of mange call for a deep scraping, for microscopial examination.

A general examination of the nervous system may be made by observing for twitchings and extreme excitability.

A specimen of fecal material should be collected for a microscopic examination for the presence of parasite eggs. This concludes a simple physical examination and will answer for most purposes.

The second aid in making a diagnosis is the microscope. This instrument is almost indispensable to the practitioner doing small animal work. The instrument need not be an elaborate one, merely a low power that may be purchased for a small amount will suffice.

Urinalysis should be conducted more often than it is.

The X-ray is a modern diagnostic instrument and if at all convenient to the practitioner should be used. It answers many a doubtful question and often saves much suffering for the animal.

Newer Therapeutics

Glucose solution in a 25% to 50% strength is very beneficial in eclampsia in bitches. We generally administer subcutaneously 10cc to 20cc for the bitch of average size and increase as needed. If response to the glucose should be slow and convulsions are threatening, a tablet of H. M. C. should be administered hypodermatically. I have used glucose many times in cases of pneumonia and distemper, particularly in these cases where they would not take or would not retain nourishment.

Magnesium sulphate is used with very good results in a 25% to 50% solution in distilled water, as a sedative. When given with morphin sulphate or H. M. C. it produces a more lasting effect.

Liquor hexylresorcinolis or commonly called S. T. 37 is a new antiseptic of decided merit. It is a stable non-toxic, non-irritating germicidal solution which is active in the presence of organic matter and destroys pathogenic organism at 37° C. in less than 15 seconds contact. As the name designates (S. T. 37), it has a very low surface tension of 37 dynes per centimeter. The germicidal power of liquor hexylresorcinolis is seventy times that of phenol yet it is non-toxic and non-irritating to the skin or mucus membranes. It is very effective as a mouth wash, vaginal douche and for irrigating infected wounds. If you have an occasion to do any oral surgery do not forget liquor hexylresorcinolis (S. T. 37) the antiseptic of choice.

Fibrogen is a highly purified tissue fibrinogen, it is a definite chemical compound. A normal constituent of all body tissues and an essential element in clot formation. It is harmless administered in any size doses if it is injected subcutaneously and not administered at the time antitoxins, serums or transfusions are being given. It must not be given intravenously. Fibrogen becomes effective after subcutaneous administration in about two hours. It hastens clotting. One cubic centimeter to the average size dog is generally recommended. A quicker ac-

tion is obtained if it is administered orally, on an empty stomach. Some investigators claim it will become effective in fifteen minutes. The writer finds it very efficient for post operative hemorrhages, etc.

Bismuth subnitrate is an old, commonly used drug. A quarter of an ounce and occasionally a half-ounce is administered two or three times daily. Unless given in large quantities it is not very effective in digestive disturbances.

Neonal, barbital, or luminal is a very good sedative in reflex epilepsy and running fits. It is much better than morphin.

Calomel, an old drug, is very good when used at the right time. The writer particularly recommends it administered as the initial treatment in febrile diseases and also as a regular treatment in dry eczemas. We have in calomel good eliminant and intestinal antiseptic.

Calcium lactate in 5 gr. to 20 gr. doses is recommended in cases of hysteria and convulsions and also in fractures.

Tannic and Salicylic acid, 5%, dissolved in denatured alcohol is very effective in moist eczema.

The following prescription is useful for dry eczema:

Petrolatum, lbs., 2.

Adeps, lbs., 2.

Castor oil, pints, 1.

Oil of tar, oz., 1.

Kerosene, pints, 2.

Sulphur q. s., to make a thin paste.

Boil the first three together, remove from fire and add the kerosene, return to fire and boil again. When nearly cool add the sulphur.

Ringworm can be effectively treated by applying equal parts of tincture of iodin, glycerin and chloral hydrate.

For ear mites in dogs, cats, and foxes I have had gratifying success with oil of cade one part and olive oil eight parts.

For painful cases of conjunctivitis I recommend an ointment of holocain and adrenalin. In purulent conjunctivitis neo-silvol is very effective and does not stain the hair.

Powdered derris root mixed with Fuller's earth or powdered talc is very efficient for flea and louse infestations. The action of derris root is not as rapid as the various pyrethum exterminating compounds, but it is more permanent. It kills the parasites, not merely stuns them.

Bacillary necrosis of cats is a decaying of the skin in circumscribed areas. The animal is given a general anesthetic of ether and the entire piece of necrotic skin is excised and the subcutaneous tissues curretted. The wound is treated daily with Dakin's antiseptic and healing is surprisingly rapid.

The operation for hematoma of the ear is an easy one to perform, but refilling is prone to occur. It is the writers custom to make an eliptical incision in the tumor letting out the fluid, currette and tape the ear back over the head. This keeps the incision open and prevents the ear from healing cauliflower fashion.

Castration of the dog and cat is a very simple operation but we always ligate the blood vessels and do a strictly aseptic operation. The field is first shaven and painted with some reliable antiseptic then a sheet with a small hole cut into it is placed over the operative field with the testes coming through the hole in the sheet. This method keeps away the long hairs, makes the operation cleaner, and thus gets quicker healing. By ligating you do not present an animal back to the owner with the whole back parts blood stained. In the dog a local anesthetic is used while a general anesthetic is given the cat.

Prolapse of the vagina that does not respond to the usual treatment of replacing and suturing the vulva may be treated by doing a laporotomy and suturing the wall of the uterus to the wall of the abdomen. We use a black silk suture for this operation. Prolapse treated this way will not recur.

I use homologous blood a great deal in those cases of colds or pneumonia of young

animals that are of susceptible age to distemper. Truly I believe it has a merit as a therapeutic agent in treating initial stages of distemper.

Hemotherapy or the treatment of disease by the administration of blood might be mentioned here. There are two methods namely the direct transfusion and the indirect transfusion. I have used the indirect method on several cases but do not feel justified in making any definite statement at this time as to its value. The technic is to collect the blood from the heart of the donor and inject it immediately subcutaneously into the patient. The cases that we have used this treatment on have shown remarkable benefit. In every case the donor was immune to distemper and the blood was injected into cases suffering with distemper or pneumonia. I do not wish it understood that the treatment is the same as administering homologus serum because the donors are not dogs that have been hyperimmunized but merely animals that have recovered from distemper.

Pitfalls in Small Animal Practice

I will mention only two, do not think that is the limit of my experience.

Be careful in using a local anesthetic with adrenalin in such subcutaneous injections as in caudectomies. The writer too well recalls the injection of two cubic centimeters of Procain solution, which contained adrenalin, 1:6000 into the tail of a small pup and after doing a nice bloodless caudectomy found on the following day that the remaining stump of the tail together with the posterior extremities greatly swollen and the following day the hair began slipping and the final result was that the pup lost far more tail than was intended.

Do not use too strong a solution of butyn either subcutaneously or epidurally. In case poisoning is produced, etherize the patient immediately and the chances for recovery are fair.

SNUFFLES IN RABBITS*

This disease of rabbits has always been a very distressing factor to rabbit breeders. Those engaged in the industry know the tremendous losses that occur from time to time not only of an economical nature but also by interference with the development of ideals.

Knowledge of this disease dates back to practically the first attempts of man to raise rabbits under domesticated conditions. With the development of new breeds and changes in environment and practically an entire change in the rabbit constitution, there were also developed diseases with which the animal had to contend.

The most common of these diseases are snuffles and coccidiosis. In this brief resume, reference will be made only to the former. Snuffles is a disease of domestication. It is rare in wild rabbits. Reference is often made to the so-called "cold" in rabbits (a slight nasal discharge) but, from experience, I have come to look upon this condition and snuffles as one and the same, varying only in degree of development and controlled chiefly by the resistance possessed by the individual rabbit.

Snuffles, primarily, is a lay term and, unless one is a careful observer, is the form most commonly seen. Generally speaking, it is an infection of the sinuses—principally the nasal sinuses, but may involve the entire respiratory system. So that, besides the chronic sinusitis there may exist a pneumonia, purulent pericarditis, pleurisy, middle ear infection, mastoiditis, etc. Where an infection of the mastoid exists it is generally manifested by the rabbit's holding its head to one side. This torsion of the head will vary with the degree of infection. Such cases also show a purulent nasal discharge. Many breeders are of the opinion that this condition is a "paralysis or wry neck." I have proved many times that this condition is of infectious origin and bacteriologically reveals the *Bacillus lepisepticum.* I have seen as many as fifty such cases in a rabbitry of three hundred animals.

* From *Veterinary Extension Quarterly,* University of Pennsylvania Bulletin, Vol. XXIX, No. 16

Careful observation of rabbits has revealed that the signs or symptoms of snuffles may be transitory or intermittent; in such cases the watery discharge ceases and the purulent (pus) discharge dries up, but may re-occur at a later period in a more extensive form; or the discharge may continue (progressive) when the watery discharge becomes pus-like in appearance and endures for a period of weeks. This latter is the usual type of the disease observed by the average breeder unless he is continually on the lookout and by observation has trained himself to detect the very early cases. In this latter stage the sneezing, pus discharge and matted hair of the forepaws are familiar signs. There is generally no fever and the rabbit may or may not eat.

The respirations are generally increased. The hair coat is dry and dull and out of prime. When the lungs become involved, there may be detected a peculiar rattling sound with each respiration. These sounds are very prominent. Such cases always die and on autopsy reveal a purulent or fibrinous pneumonia involving one or both lobes as well as the pleura.

At one time the etiological factor of snuffles was considered to be the *Bacillus bronchisepticus* (Hoskins, H. P., and Ferry) but more recently the investigations of Webster have revealed that the *B. lepisepticum* plays a more important role, though the former micro-organism cannot be entirely eliminated.

The predominating bacteria present in the nasal tract of rabbits are the *B. lepisepticum,* the *B. bronchisepticus,* the *Micrococcus catarrhalis,* and Staphylococci, either alone or in combination. Between 30% and 40% of normal rabbits carry in their nasal tract the *B. lepisepticum.* When such rabbits are exposed to variations of temperature, improper housing, dampness, poor ventilation, poor food, unsanitary conditions, etc., the resistance is lowered and the characteristic symptoms of what is called snuffles appear. When symptoms are present and the nasal discharges are examined the *B. lepisepticum* is generally found in 70% to 80% of the cases—in many instances the only type of micro-organism present. When introduced into the nasal tracts of rabbits free of this micro-organism the disease is reproduced, as well as the various complications such as mastoiditis, pneumonia, etc. This constant association of the *B. lepisepticum* with rabbit snuffles, pneumonia, etc., has led many investigators to look upon it as the cause.

One point worthy of emphasis is that a rabbit may be apparently normal in appearance and still carry the *B. lepisepticum* in its nasal tract and prove a source of infection for other animals. Unfortunately, it can be detected only by a bacteriological examination which is ordinarily impractical in a large rabbitry.

Relative freedom from this disease can be maintained, however, by a strict observance of sanitary methods. Thorough disinfection, judicious feeding, proper diet (vegetables, hay grain), dry hutches, and especially maintenance of an even temperature if animals are housed indoors. The introduction of new animals is of especial importance and they should be held in quarantine for at least two weeks. The borrowing or loaning of rabbits for service should be discouraged as it frequently introduces the disease.

There is no known specific for snuffles. Many drugs, such as camphor, menthol, argyrol, etc., have a temporary effect but are not cures. Atropin, sulphate, 1/100 gr., has been used extensively, but its effect is only temporary. Adrenalin hydrochloride, in a 1 to 1,000 solution, gives relief in that it facilitates breathing. But this is the most that can be expected from such preparations or the many proprietary preparations recommended. None of them sterilize the nasal tract nor is there any chemical or drug known that will. The use of bacterins containing the *B. bronchisepticus, B. lepisepticum,* etc., are of limited value and undoubtedly raise the general resistance, but have not produced the results expected of them.

My own experience has been that better results are obtained by using hemorrhagic septicaemia aggressin, in 1 cc. to 2 cc. doses, subcutaneously, as a preventive only. Several large rabbitries in which this form of

immunization has been practiced for the past few years have been relatively free of the disease. Rabbits with the disease are not benefited by injections of the aggressin. This form of prevention is based on the fact that the *B. lepisepticum* (a mutant of the hemorrhagic septicemia group) is of frequent occurrence in snuffles.

Philadelphia, Pa. M. J. HARKINS.

CAESAREAN SECTION IN THE DOG*

Realizing that no two surgeons use the same method for this operation, I am about to describe the one that has given me the best results.

Every natural chance should be given the matron before deciding to operate. Manipulation, pituitrin, and plenty of time, fifteen or twenty hours not being dangerous in most cases. We all know that so many times the use of forceps is very discouraging, as many more puppies are killed than are saved by this method.

On deciding to operate, it should be done with as much speed and dispatch as possible.

Place the patient on the table ventral side up, tie all four legs. Shave and disinfect a liberal area, with either iodin or Mercurochrome. Anesthetise with ether alone. As soon as anesthetised, loosen the hind legs and place the patient squarely on her back, until peritoneal cavity is opened, thus the skin, muscle and peritoneum are in perfect apposition. The incision is made on the median line, from about one inch posterior to umbilicus, back to near the pubic arch. Place sterile cloth or gauze around patient and turn on the side toward the operator.

Preparation must have already been made to care for the young, therefore some assistant must be ready to receive them as they are practically all still born and require skilled and energetic action to save them.

There will nearly always be a pup in the body of the uterus; raise this pup up through the opening and make the incision on the ventral side using the puppy as a background for the knife. You will find few blood vessels at this point, so make your opening plenty large as a torn uterus is hard to mend.

All puppies are removed through the one opening. Carefully remove all placenta and drain out all fluid and inject a dram or two of mercurochrome into each horn.

Close the uterine incision with A or B silk sewing thread, using the modified Lambert or rather a continuous Lambert suture, quite close together and do not retrace.

Place the matron in the exact position as when the incision was made and close the incision with one set of interrupted suture, silk No. 7; placing the sutures about one-third of an inch from the incision and one third of an inch apart, inserting down through the skin, muscle and peritoneum, care being taken not to tie too tightly.

An attendant should hold matron until she is out from under the anesthetic and over her excitement. Then she is placed in a crib with her young and kept as quiet as possible. No bandage or covering of the wound is necessary.

On the third day the wound is swabbed with boric acid solution and painted with mercurochrome. The fourth day every other stitch is removed and the remainder are removed the next day. The patient is usually discharged two days later. It is much better for the patient not to let the owner see her during her stay in the hospital.

Des Moines, Iowa. F. F. Parker.

*Read at the 41st Annual Meeting of the Iowa Veterinary Medical Association, Des Moines, Jan. 22-24, 1929.

28,000 dogs were used by the German Army during the World War. In addition to their use with the army, dogs were used with guards at bridges and strategical points, with sentries at prison camps, by the military police and in other ways. Practically all of these dogs were donated to the government by dog clubs and individual owners. Owing to the long-established policy of the German government of offering prizes for competitions of trained dogs, a large part of the 28,000 dogs used by the army were already partially or fully trained when they were obtained.

CAESAREAN SECTION WITHOUT UTERINE SUTURES*

Subject: Angora Cat, six years old.

History: Dystokia, four days overdue.

Operation: Ether anesthesia. Ventral median line, 2½" abdominal incision to within ½" of the umbilicus. We prefer in most all cases the abdominal to the flank operation, and have never found that the section undertaken at this point offers an obstacle to the proper suckling of the young; furthermore, it undoubtedly is of advantage in such cases as the one here reported, or in axial rotations of a horn or in cases of adhesions resulting from a previous Caesarean section, etc., etc. After making the incision in the abdominal wall, our next procedure was the usual one of having an assistant press with both hands on the lateral walls of the abdomen, so as to cause the horns to protrude through the abdominal incision, the operator being thus assisted in lifting out the horns without the danger of tearing the broad ligaments. In this particular case it was found that one horn contained two dead fetuses, whereas in the other horn a marked case of hydrometra was found to exist, appearing as a sausage-like mass 5" in length and 1½" in diameter. The body of the uterus likewise exhibited a hydrometra, being presented as a spherical mass about the size of a hen's egg, this enlargement was quite separate and distinct from the hydrometric horn. The horn containing the fetuses was first incised, fetuses removed and blood clots squeezed out. The incision was found to bleed freely, and involution of the horn appeared to be taking place normally, consequently the incision in the uterus was not sutured. In a number of cases where the uterus is in good condition we have dispensed with the suturing of the organ and have obtained excellent results. The distended horn and body of the uterus were freely incised, the contents evacuated and cavity swabbed lightly out with Lugol's solution. These incisions were likewise not sutured. The uterus was permitted to remain exposed to the air for a period of at least 5 minutes, after which it was pressed back in the abdominal cavity and the omentum pushed well forward so as to guard against adhesion of the same to the cut surfaces. Interrupted sutures of the abdominal wall incision, ¼" apart, including all structures, were used. Five days later sutures were removed. Animal made a complete recovery.

The report in this case was primarily undertaken with the idea of acquainting veterinarians with the fact that we have been carrying out for the past several years the practice of not suturing the incision or incisions in the uterus provided the organ is viable as shown by the fact of bleeding freely when incised and by appearing to be properly undergoing involution. Our observations lead us to believe that when the lips of the incision in the uterus are inverted and stitched, an area along the line of the sutures sloughs and a certain amount of putrescible matter reaches the cavity of the uterus.

Philadelphia, Pa. W. J. LENTZ.

* From *Veterinary Extension Quarterly*, University of Pennsylvania Bulletin, Vol. XXIX, No. 16

A fund designated as the "Fellow Fund" is being raised to ascertain further knowledge about dogs. Doctor Warden of the Department of Psychology of Columbia University found that a German shepherd dog responded to 400 different words used in commands. The Fellow Fund is to be used for further tests.

Tick paralysis in the dog on the east coast of Australia, due to the mature female *Ixodes holocyclus,* is not uncommon. Death due to respiratory paralysis sometimes occurs within five days after the female tick becomes attached. It is presumed that the paralysis and death in the fatal cases are due to a toxin derived from the tick.—*Bio. Abst.*

Corneal ulceration is of rather frequent occurrence, particularly in dogs. In some cases, ulceration of the cornea is due to local infection with the *B. pyocaneus* and these cases are quite uniformly relieved in the early stages by the use of a properly prepared biologic.—*Bio. Abst.*

VETERINARY CONGRESS IN SPAIN

On the occasion of the International Exposition of Barcelona, a Spanish veterinary congress will be held, which will concern itself only with scientific themes. American veterinarians are cordially invited to attend this Congress, which will take place at the Grand Palace, International Exposition, Barcelona, in September.

For further particulars, write José Rueda, Secretary, Veterinary Section, International Exposition, Barcelona, Spain.

WISCONSIN STATE BOARD EXAMINATION

The Wisconsin Board of Veterinary Examiners will hold their annual examination at the Capitol Building, Madison, on June 25 and 26, 1929, commencing at 9:00 A. M. June 25th.

T. H. FERGUSON, Secretary.
Lake Geneva, Wisconsin.

MISSOURI VETERINARIANS MEET IN JUNE

The Missouri Veterinary Medical Association will hold its annual meeting on June 25-27, 1929, at Sedalia. The sessions will be held in the Veterinary Building at the State Fair Grounds.

J. D. RAY, Secretary.
401 New Center Bldg., Kansas City, Mo.

MAINE DECLARED FREE OF BOVINE TUBERCULOSIS

The entire State of Maine has been declared by the Bureau of Animal Industry to be free of bovine tuberculosis.

By this recognition, effective May 1, Maine became the first State in New England and the second in the United States to suppress tuberculosis among its cattle. North Carolina was the first, having been declared free of the disease on October 1, 1928.

The successful outcome of Maine's eradication campaign is the culmination of approximately 12 years' systematic tuberculin testing. More than 650,000 such tests have been applied to cattle of which about 1 per cent reacted and were removed for slaughter.

VETERINARY SECRETARY ELECTED MAYOR

C. J. Scott, the ever genial and highly efficient secretary of the Iowa State Veterinary Medical Association, was elected Mayor of Knoxville, Iowa, recently. The special issue of the Knoxville Journal, which told of his election and gave a biographic sketch, contained also a full page advertisement by the Marion County Veterinary Medical Association and a reprint from the March issue of VETERINARY MEDICINE of the article, "Tricks of the Nostrum Makers," by J. H. Weiner, of Kansas City.

The Cedar County News of Hartington, Nebraska, recently contained a full-page advertisement, headed: "Call a graduate veterinarian."

A grant of two hundred dollars has been made by the provincial Department of Agriculture to the Veterinary Association of Manitoba.

George H. Conn, for the past several years in charge of the Veterinary Department and Farm Live Stock of the W. T. Rawleigh Company, is now employed by the Furst-McNess Company of Freeport, Illinois, in charge of their Animal Husbandry Department.

Mrs. Lillian, wife of Dr. Geo. W. Constable, Santa Rosa, California, died suddenly in a local hospital on March 31st. Mrs. Constable was active in the parent-teachers, church and women's clubs of Santa Rosa. She is survived by her husband, and two children, Lillian, 9, and Wallace, 7.

Walter L. Greening, aged 40 years, was killed in an automobile accident near his home in Long Beach, California, on February 9, 1929.

Doctor Greening graduated from McKillips Veterinary College in 1913 and engaged in practice in Illinois, his native state, for several years; he also was employed in the B. A. I. on meat inspection and on field work. He was in the Medical Officers Training Camp at Camp Greenleaf, Georgia, in 1918.

He went to California in 1923 and located at Long Beach, where he conducted a dog and cat hospital until the time of his death.

He is survived by his widow, two daughters, one son, his father and mother.

DEAREST MEAT

The dog on the foot is the highest-priced flesh and blood in the world per pound. The greatest bulls, the most famous sires of other species, never attain near the price paid for canine studs.

Champion Eden Aristocrat, who went best terrier at Westminster and best in show at Boston, was purchased recently from England, we understand, at a price of six thousand eight hundred dollars. He is of the small order, about fifteen pounds in weight—a price of four hundred and fifty-three dollars per pound. This price also is a record price for foxterriers. Only one breed, that of chows, has exceeded it in a record purchase price.—*Dog World.*

DOCTOR PETERS HONORED BY ROTARIANS

A. T. Peters, president of the Vitamineral Products Company, Peoria, Illinois, has just been elected Governor of the 44th District International Rotary.

Doctor Peters has been active in Rotary ever since the organization of the Peoria Chapter. He has completed four terms as president and for years, has headed the Committee for the Relief of Crippled Children and also has had charge of a Peoria Boy Scout Troop.

Doctor Peters' friends in the profession will be glad to learn that he has been so signally honored as Governor of the 44th Rotary District.